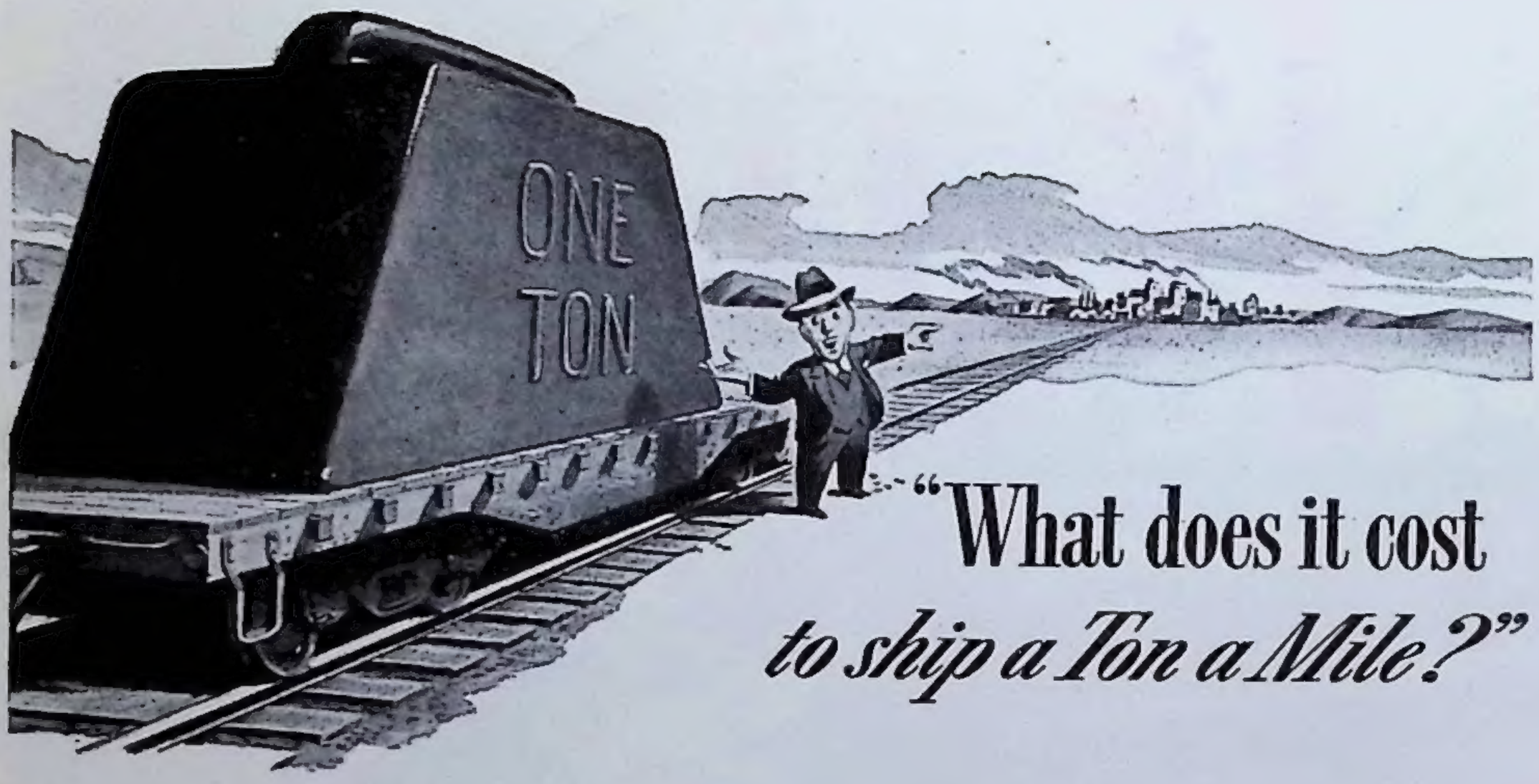
Trains

May
1945

25¢



"What does it cost *to ship a Ton a Mile?*"

FOR moving one ton one mile by rail, the average charge — and note that word "average" — is less than one cent.

O.K., you may say, that ought to make freight rates simple. Why not "sell a ticket" for moving freight, just like selling a passenger ticket? Take the number of tons, the number of miles, the average charge, and figure it out?

We wish it could be that easy. But here is the problem.

Some freight is cheap, heavy, little subject to loss and damage. Some is valuable, light and bulky, difficult, risky and expensive to handle. Such differences in the character of freight call for differences in rate making. No one would suppose that charges should be the same on a ton of coal as on a ton of diamonds.

To charge even as little as one cent per mile for hauling a ton of some of the heavy, low-priced commodities would mean, in many cases, making rates so much higher than they are now that such commodities could not move over the long distances we have in this country and be sold at a profit in distant markets.

On the other hand, rates on more valuable articles can be much higher than the average without making any appreciable difference in the price at which they are sold.

So, to make it possible for all sorts of freight to be moved to market, and at the same time meet the necessary costs to the railroad of doing the job, there came to be these differences in freight rates — with the result that shippers, railroads and the public benefit from the amazingly wide distribution and use of all sorts of commodities all over America.

"Prices" tailored to the public interest

Rate-making seems complex. But that's because commerce is complex. Rates, or transportation prices, must be made for the movement of tens of thousands of different articles over various routes between tens of thousands of places, all over the country, and under all sorts of conditions. If those prices, as a whole, are too low, the railroads won't be able to meet the costs of doing business. But if transportation is priced too high, the traffic doesn't move — and that is not good for either railroads or shippers.

And so it is that over the years the railroads have worked on a basis of "what is best for our customers is best for us." It is to the interest of every railroad to build up the area it serves. It wants to encourage the growth of industries. It wants to encourage agriculture. It wants to encourage mining, lumbering, every other type of business. Rates are figured out for just that purpose — to meet the needs of commerce — and are revised to respond to changes in those needs as they come about.

Where the I. C. C. comes in

Many years ago, the Interstate Commerce Commission was established to prevent undue discrimination in railroad rates as between shippers and communities, and to see that rates are "just and reasonable."

All railroad rates are open covenants openly arrived at after discussion between the railroads and shippers. All rates are published, are filed with the I.C.C., and are open to anyone to see.

But in any case, a shipper who isn't satisfied has the right to ask that the I.C.C. step in and investigate. And more than 250 volumes of I.C.C. reports show how active the Commission has been in this respect.

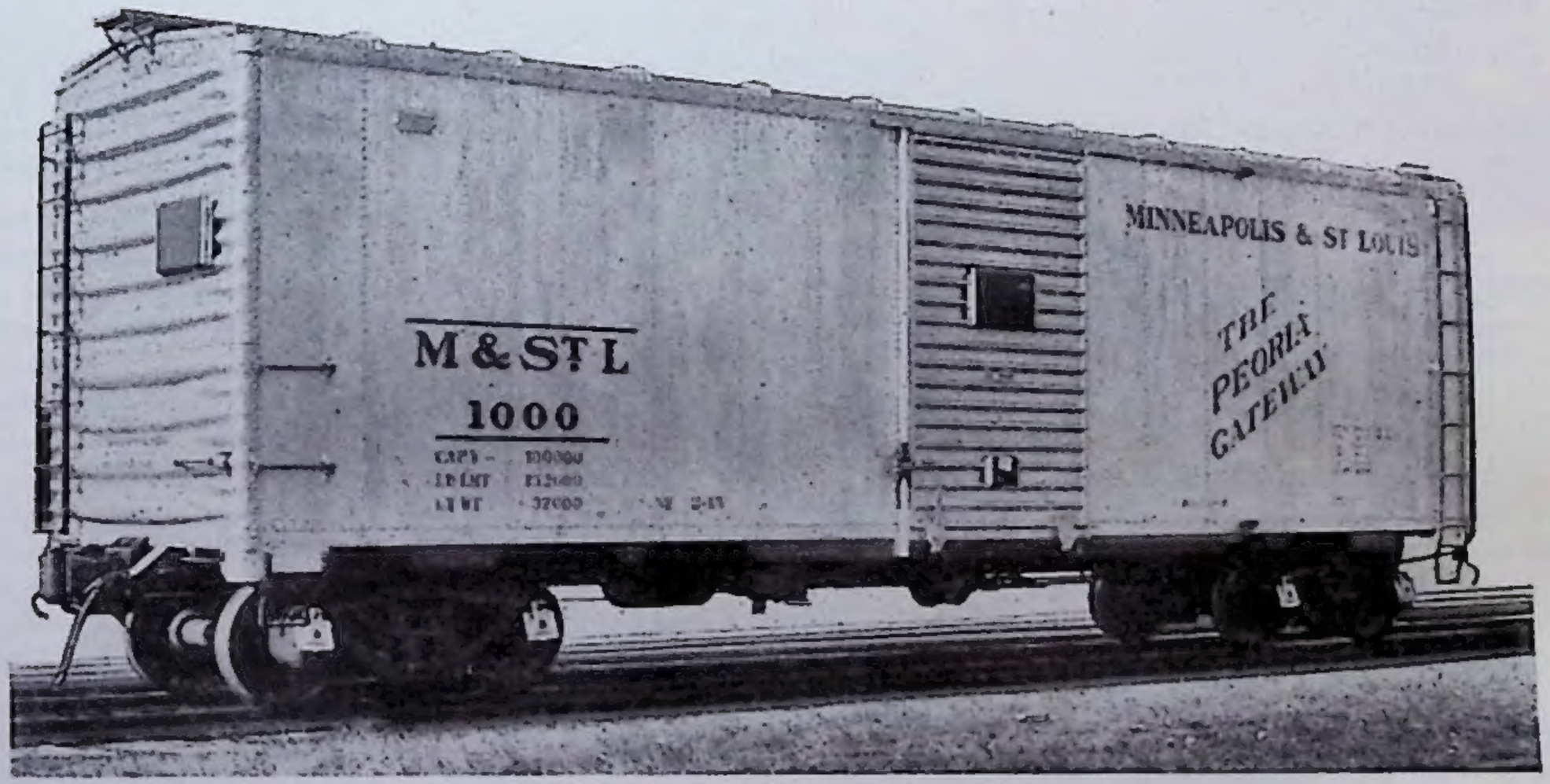
This principle of tailoring transportation prices to the public interest has stood the test of time — and no man who has made a sincere and expert study of the problem has found a better system for all concerned.

ASSOCIATION OF
AMERICAN RAILROADS
All United for Victory

ALUMINUM BOX CARS

Newest of all equipment for
Efficient Transportation of Freight
Ride the Rails of

THE MINNEAPOLIS & ST. LOUIS RAILWAY



The Aluminum Car shown in the picture is already in service as the first of ten being built for the M. & St. L. Each weighs one-fifth less than a standard steel car of the same size. Aluminum Alloy sheets combine with tubular axles to reduce the weight to 37,000 pounds. The hollow axles, another new development, make each truck 550 pounds lighter. All this reduction in dead weight increases the load limit 8,700 pounds.

Aluminum Box Cars will not be rolling in solid trains on the M. & St. L.

Rather, they are a symbol of the Road's constant progress in providing the finest of modern equipment for

FAST TRANSPORTATION OF FREIGHT
Over its network of strategic lines in the Great Midwest
AND THROUGH ITS PEORIA GATEWAY

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO. — THE PEORIA GATEWAY

THE MINNEAPOLIS & ST. LOUIS RAILWAY
General Offices: NORTHWESTERN BANK BUILDING, MINNEAPOLIS 2, MINN.

Trains

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American railroads produce the world's most efficient common-carrier mass transportation and are the foundation of our country's industrial productivity.

IT WAS about this time of year, on a sunny spring day after an all night rain had freshened the green of the fields and brought out the buds on the trees, that I rode the Maryland & Pennsylvania. Eastern railfans hold the Ma & Pa in unusually high esteem, and I was looking for the reason why one small road should be so universally loved.

Riding the Ma & Pa is like taking a walk down a beautiful country lane. Hardly were we out of the Baltimore station before the train was seemingly lost in a woods, floored with wild flowers right up to the ends of the ties and studded with trees all brightly green with fresh buds. Farther north, near Loch Raven, the train rode high on the edge of the ridge with broad green lawns of country estates spread out across the valley, neatly squared off by white fences.

The little towns along the way were friendly, pretty and clean. The tracks ambled informally between buildings, and the stop was usually in front of the postoffice. The belt of noisy, dirty industry which unfortunately lines the railroads in so many large cities was conspicuously missing, although there were many small plants and warehouses along the line to contribute to the economy of the territory and to the railroad's freight.

The train crew members were a friendly bunch. When we waited for a meet with the southbound train they told me how much time we had and I walked down the right of way to look over some track improvements. I was told about the steam train which had been in service up to the previous day while the gas-electric was in the shops, and I watched the engineer tinker with the engine, which apparently had not been completely cured by the shopping. At Delta we passed one of the road's Consolidations with a freight train, and the conductor told me proudly that the No. 43 had been purchased from Baldwin as recently as the mid-twenties, "pretty nice going for a road as small as ours."

As the Ma & Pa heads farther north toward York the track winds back and forth in the heavily wooded valley of Muddy Creek. From this it emerges into smoothly broad hills with clean, freshly painted farm buildings of the Pennsylvania Dutch. Before I had realized that it was lunch time and I was hungry, we were into York and the experience was over.

Any ride is better in spring when all outdoors is awakening. But I am sure no ride, even in spring, can quite compare for informal, rustic beauty with the Ma & Pa. Now I know why the eastern railfans rave about this one small 77-mile line.

Pennsylvania Orders 50 T-1's

For the first time in 30 years the supremacy of the K-4s Pacific as steam passenger power on the Pennsylvania Railroad has been seriously challenged. The road has ordered 50 4-4-4-4 T-1 four-cylinder passenger locomotives, 25 each from Baldwin and the Altoona shops. The T-1 is a descendant of the experimental S-1 exhibited at the New York world's fair, and two T-1's were built in 1942 [January 1943 TRAINS] for experimental service.

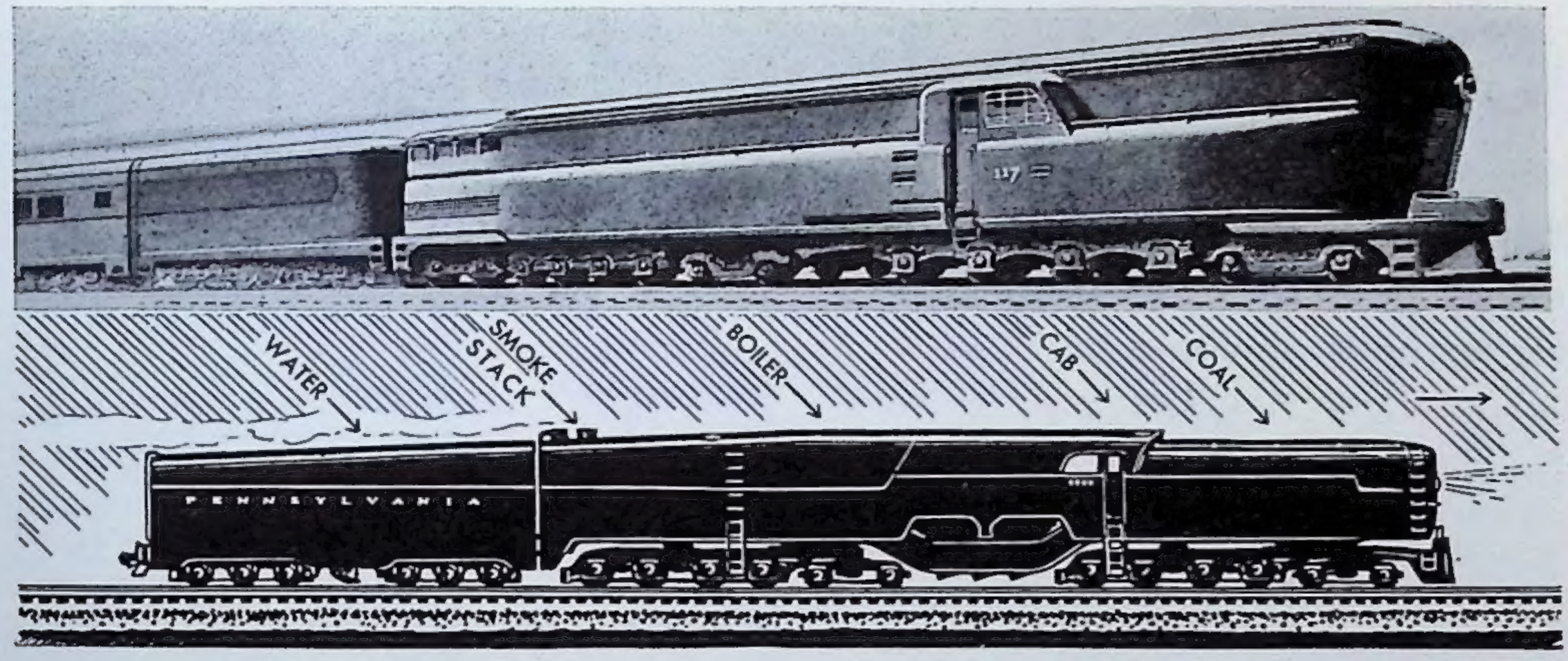
The poppet valve system of steam distribution manufactured by Franklin Railway Supply is used on the two experimental T-1's and will be applied on all the new series. This type locomotive was designed to pull an 880-ton train at 100 miles an hour. Division of the driving mechanism among four cylinders instead of two permits lighter revolving and reciprocating parts. The Pennsylvania now has 80 four-cylinder rigid-frame locomotives on order or in service, including 26 Q-2 freight locomotives.

Locomotive Notes

Missouri Pacific is equipping 10 Santa Fe type locomotives of the 1720 series with roller bearings and is otherwise modernizing them. . . . 32 4-8-4 locomotives have been ordered in this country by National Railways of Mexico, half from Baldwin and half from Alco. Seven Electro-Motive Diesels have also been ordered for use in mountain territory. . . . Great Northern has ordered 25 Diesel locomotives, six 2750 horsepower freight, three 1350 horsepower road and switching, and 16 1000 horsepower road-switchers. . . . To provide helper assistance in working the Seventeen Mile grade west of Cumberland the B&O has leased Consolidation locomotives from both Reading and Western Maryland. It is possible to see the *National Limited* go up this grade with a Mikado doubleheading the Diesel and a Western Maryland pusher on the rear. . . . Three new 4000 horsepower Diesels just delivered to the Alton by Electro-Motive are among the first passenger Diesels built since early 1942 when war stopped manufacture. They are painted in Alton colors, red and maroon. All of the Alton's feature trains between Chicago and St. Louis are now Diesel powered. . . . C&EI expects two passenger Diesels in August. . . . Two old Northern Pacific coal-burning switch engines, laid up long before the war, had been converted to wood burners and are in service at Shelton, near Seattle, where they burn waste wood from the mills. The two busiest men in the state of Washington are probably the firemen of these two engines.

A New Sunshine Special

The Missouri Pacific and the Texas & Pacific will spend $9,000,000 to build four new trains for the *Sunshine Special* service between St. Louis and Texas. Two of the trains will provide daily service between St. Louis and Dallas-Fort Worth while the other two will run daily between St. Louis and Houston-San Antonio. Corresponding new lightweight coaches and



Projected turbine locomotives which are radical departures from anything previously built have been announced by the Chesapeake & Ohio (top drawing) and the Pennsylvania Railroad (lower drawing). Both locomotives will be coal burning and will carry the coal supply at the front and the cab at the front of the boiler. The C&O unit however will use electric transmission and the rear space will be filled with the turbo-generators while the Pennsy job will be direct drive and the rear space will be for water storage. C&O has ordered three of its locomotives from Baldwin to power its postwar streamliner. They are of 6000 horsepower, sufficient to handle a heavy passenger train at 100 miles per hour. The Pennsylvania "Triplex" design, an outgrowth of experiments with the S-2 6-8-6 turbine locomotive, uses two direct drive turbines, one each on the two swiveling drive trucks, to develope 9000 horsepower. The dimensions of 137½ feet overall and 122½ foot wheelbase are about the largest possible.

sleeping cars will also run to and from Memphis, connecting at Little Rock. The trains, similar in appearance to the MoPac's *Eagles*, will be renamed *Sunshine Eagle*.

Motive power will include four 4000 horsepower Diesels and three 2000 horsepower units, and the cars include 32 sleeping cars, two sleeper lounges, two diners and five diner-lounges, 21 coaches, and eight express, baggage and mail cars.

Odds and Ends

Santa Fe is now using its new double-track steel bridge across the Colorado River at Topock, Ariz., near Needles. New approaches improve curvature and grade. The old single track bridge has been presented to Arizona and California for a highway bridge. . . . The Army has transfered directly to the O.D.T. enough carbon steel for the production of 2000 additional new box cars in the first nine months of 1945.

On March 5 the war busy Boston & Maine marked, without pausing for ceremonies, the 100th anniversary of the founding of the Fitchburg Railroad, its predecessor. . . . Canadian National is approaching completion of its new 14.29-mile line in Montreal connecting the east end with its new Central Station [February 1944 TRAINS]. . . . C&NW is substituting the word "System" instead of "Line" in its trademark.

Australian railway gauge will be standardized at 4 feet 8½ inches after the war, with Commonwealth aid in converting the wider and narrower tracks to the standard, according to plans now being made. . . . The C&O is making studies looking toward postwar establishment of through passenger service between the east and west coasts without change of cars. . . . The C&NW's breakfast-time radio program, the "400" hour, obtained more than 35,000 letters in response to a recent announcement. The road believes this indicates the highest listening audience of any single-station radio program in the country.

A. C. Kalmbach.

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City of the Iron Horse

BY STUART COVINGTON AND JOSEPH P. SADLER

Birmingham is a railroad crossroads of the South with eight large roads plus terminal lines

THE brake shoes grind and the train we're riding slackens speed. A station board flashes by: "Irondale Junction." The brakeman strides down the aisle, bawls "Birrrmingham!" in a slow southern drawl. From the train window we catch a glimpse of neat, red-roofed cottages surrounded by well-trimmed lawns.

This homey panorama is brushed suddenly away, and railroad yards, factories belching black smoke and a parade of gigantic, grimy blast furnaces replace it. We recognize a few of the names written hugely across the tops of the tall furnaces: U. S. Steel, Sloss-Sheffield. Others aren't so familiar: Woodward Coal & Iron Company, Pratt Coal & Coke Company, Ensley, and others, all famed in the steel and iron world.

The big green and gold Mountain type locomotive whistles a sibilant crossing warning, and we're pulling into Birmingham, "the Pittsburgh of the South." The train is the *Kansas City - Florida Special,* operated jointly by the Southern and the Frisco Lines. It crawls beneath the viaduct leading to teaming Irondale and steams slowly into the Spanish-type Terminal Station. On its rear are a brace of sleepers which will be transferred to the Frisco train on an adjacent track. Ahead and all around us is Birmingham, the "Magic City," focal point for eight Class 1 roads, two terminal lines, and innumerable industrial roads, all now operating at top capacity.

Forty-one daily passenger trains, plus the two every-third-day coach streamliners *City of Miami* and *Southwind,* serve Birmingham. All but 13 of these use Terminal Station. Rush hour in its long trainsheds begins at 7 in the morning. By the time the hour hand on the big clock has reached 8, five trains have arrived and departed beneath the terminal's sheds. One will be on its leisurely way to Macon, Ga., two more to Atlanta, and others to New Orleans via Meridian, Miss., and to the nation's capital via Chattanooga.

The other large station in Birmingham is the L&N's, a through - type structure with tracks above street level. It is not far from Terminal Station, and the Southern's tracks parallel the L&N right through the station layout. All Southern trains to and from the south and west, therefore, pass practically through the L&N station. It is not unusual to see Southern switch engines puffing back and forth between their Paint Mill and 37th Street yards while the L&N's *Pan-American* is standing at one of the umbrella-shed station platforms and while on the outside tracks a Southern freight Mike is blasting southward with supplies for ships at Mobile and New Orleans. Since the L&N and the Southern originally located their crossing at Birmingham in 1872, the single-track mains have grown to a twelve-track spread at the station. The L&N turns south several blocks to the west and here crosses the Southern to go on its way toward Montgomery. This crossing is protected by an interlocking plant.

Third station is the Atlanta, Birmingham & Coast's small frame structure at Elyton, two miles west of downtown Birmingham on the edge of the AB&C's freight yards. Two trains a day, one in and one out, use this station.

Birmingham is exceptionally blessed by having double, and in some instances, triple, service between itself and other large cities. Both

All photos by Joseph P. Sadler, 1723 S. Court St., Montgomery, Ala.

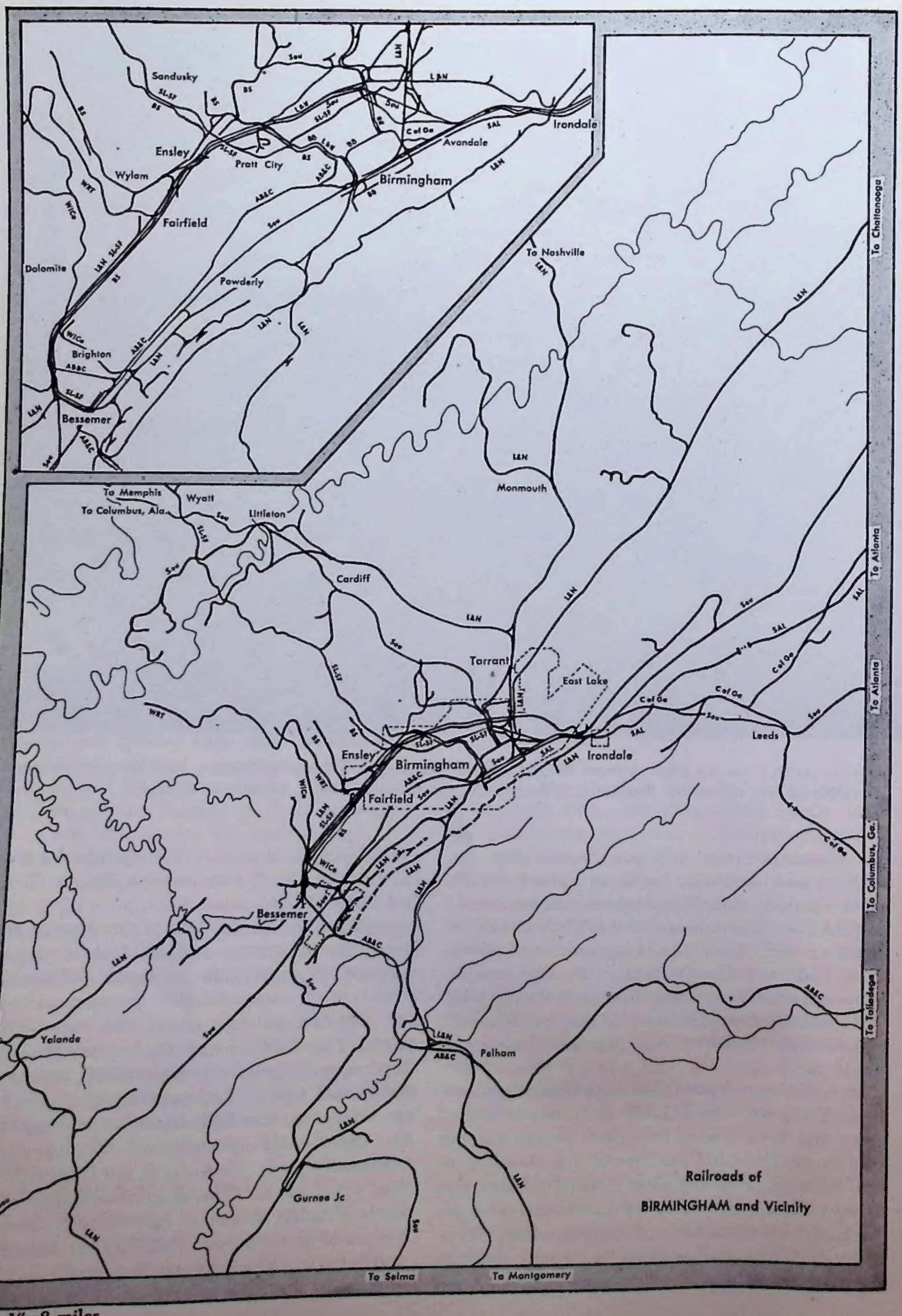
Looking north from the First Avenue Bridge toward Birmingham's Terminal Station, used daily by 28 passenger trains of five railroads: Southern, Seaboard, Illinois Central, Frisco, Central of Georgia.

the Illinois Central and the Frisco offer the traveler service to St. Louis on almost identical schedules, while Birmingham-Chicago commuters have their choice of the IC *Seminole* or of either the L&N's *Pan-American* or *Azalean*. Both L&N and Southern ply the Cincinnati - Birmingham - New Orleans route, with the L&N bettering the Southern in the first portion and the Southern holding the shorter schedule in the latter case.

Most hotly contested field is the Birmingham-New York run. The L&N and the Southern enter the race again, this time joined by the Seaboard. The L&N has New York sleepers on the *Azalean*, and the *Pan-American* also has a New York connection via Cincinnati and the Pennsylvania Railroad. Southern offers three through trains daily, plus two more through sleepers on other runs (one of which is en route from Shreveport). The Seaboard's trains on the New York run are the *Robert E. Lee* and *Cotton States Special*.

Slightly less competitive is the Florida field. Here, the Southern and Central of Georgia compete on practically an equal footing, each operating on approximately the same schedule and offering patrons about the same equipment. The CofG, however, boasts the every-third-day *City of Miami*, which betters the Southern's time to Jacksonville by a wide margin. Here, too, the L&N has a say with its third-day *Southwind* streamliner, which runs on nearly the same schedule as the *City of Miami*. The third of the Florida streamliners, C&EI's *Dixie Flagler*, does not run through Birmingham, but instead goes NC&StL via Atlanta.

Although split between five roads, a liberal portion of the runs in and out of Terminal Sta-



Scale 1″=8 miles.

tion are through, and since most of their equipment is transferred from incoming trains, the trains awaiting departure time often look stubby and denuded. Usually only the engine and a couple of baggage cars are in the depot, with perhaps a coach and diner. The rest of the train's consist is tied on by the Terminal Station Company's yard engine as soon as it can be switched from the connecting train. In some cases only a few Pullmans are transferred; in others, most of the train. However, the flyers never lose their original identity. For example, the Frisco's *Kansas City - Florida Special* is carded as such all the way to Jacksonville, where it becomes a part of the Florida East Coast's morning sleeper train. In the same manner, the IC's *Seminole* is transferred to the Central of Georgia under its rightful name, as is the Frisco's *Sunnyland* when the Southern takes over for the run to Atlanta.

Back in the days when Terminal Station was constructed, there were no such things as zoning laws. Consequently, a large blast furnace nestles close to the station, much to the annoyance of passengers who wish to go to bed early in their sleepers.

YES, Birmingham is indeed the rail city of the South! To realize this fully, one must visit Birmingham and travel over this sprawling steel and iron metropolis. One cannot go more than a few blocks in any direction without crossing tracks, all kinds of tracks: main, spur, branch, siding, storage, connecting, industrial, belt and private. This is not because Birmingham has so many railroads. Many smaller cities have more railroads than the eight trunk lines operating into this city of 400,000 population. Coal, iron and later steel founded the present city, and the principal means of transportation for these commodities was, and still is, the railroad.

The six-mile-wide and 75-mile-long Jones Valley is a natural location for a city, but the actual start of Birmingham was due to railroad surveyors. It is literally a city of the rails. The Southern's present main line was built through the valley in 1871, at which time the only town in the valley was Elyton. In the following year the surveyors of the present L&N located their crossings of the Southern not at Elyton, as proposed, but two miles east in the cotton fields. That, in 1873, was where a small depot was

This sprawling freight yard is used jointly by the Illinois Central, its subsidiary, Central of Georgia, and the Frisco. Joint use of trackage and facilities is very common in the tightly networked Birmingham area. The locomotive in the foreground is one of Frisco's 4200 series freight haulers.

built, and that, in 1945, is the heart of downtown Birmingham. A railroad land company started the settlement, and the discovery of iron ore, coal, and limestone nearby did the rest. This is the only region in the world where coal, iron and limestone, the raw materials for steel making, are found near each other in large quantities.

The panic of 1873 dealt Birmingham's progress a severe blow. Traffic on the Alabama & Chattanooga (now Southern) and the South & North Alabama (now L&N) was almost nonexistent. Reports of the companies stated that the freight cars hauled so little tonnage they didn't bring in enough revenue to pay for the grease used on their axles. But in 1876 the first coke pig iron was produced by the Eureka Company at Oxmoor, on the main line of the Louisville & Nashville just south of the city, and that year the L&N hauled 97,000 tons of coal alone, most of it to be used both directly and indirectly in the manufacture of pig iron. What a contrast to the lean years just passed!

Until 1898 the majority of the basic iron produced in Birmingham district was transported to Pittsburgh to be used in the production of steel. This operation was costly and time-consuming. Repeated attempts were made to produce first-class steel right on the site of the mines in Birmingham, but it was not until July 1, 1897, that the Birmingham Rolling Mills (now a part of the Republic Steel Corporation) produced Birmingham's first steel, with two open-hearth furnaces. The young Tennessee Coal, Iron & Railroad Company immediately began to cast about for the large-scale production of steel. Money was needed, and here again the railroads stepped to the front. The Southern and the Louisville & Nashville both agreed to purchase TCI&RR bonds to the tune of $125,000 each to help finance the initial construction. The plant was near Ensley and the first run of steel was made in 1899.

Like Pittsburgh, Birmingham is dirty, grimy, noisy. The steel mills and blast furnaces cast a pall of smoke which often obliterates the sun. At night, the lurid glow from the furnaces lights the sky for miles and can be seen from incoming trains long before the Magic City is reached. The furnaces are kept in blast 24 hours a day, never growing cold. Beside them, long, snake-like strings of dirty-red coke cars wait to be drawn back to the mines for more of their precious load.

ALTHOUGH the location of the city makes it one of the crossroads of the South for passenger travel, it is the freight traffic that makes it rank as one of the great rail centers of the nation. More than 200 different products are manufactured here, including steel plates for ships, asphalt and cement for highways, steel rails to carry a good portion of the nation's trains, and half the country's supply of cast-iron pipe used for sewer, water and gas mains. The Southern Railway has perhaps the most

Busy Fifth Avenue dives under the Spanish-type Terminal Station in a long tunnel which also passes beneath the entire track layout. The other large passenger station in Birmingham is the Louisville & Nashville's, used only by that road and located a mile away across downtown.

extensive facilities in the valley, counting shops, yards, terminals, tracks and trains operated. It was first into this section, built to connect Chattanooga with Meridian, Miss., and it headed in a southwest direction right down the heart of Jones Valley. This line now reaches New Orleans. The line from Atlanta, completed in 1883, joined the Chattanooga line at Irondale and entered the valley through Red Gap, using the original tracks for six miles into the terminal. Today a great four-track main carries Southern trains through the gap on easy grades.

The road to Columbus, Miss., which winds about through North Birmingham before heading west, was put into operation in 1887. For scenic beauty on a small scale this road boasts tunnels, curves and grades that are reminiscent of the railroads of the West. The Birmingham-Selma line was completed in 1891 and gives the Southern another outlet to the Gulf of Mexico, at Mobile. Besides the trackage within the terminal area the Southern maintains large classification yards and storage tracks at East Thomas, Paint Mill Yard, Morris Avenue, Ensley, 37th Street and Bessemer. Finley Shops, in East Thomas, are the division headquarters of the Alabama Great Southern and the Birmingham Division of the Southern, and are the largest and most modern of the Southern shop facilities. The Southern alone employs approximately 3000 persons in the Birmingham area.

Another busy railroad in the area is the Louisville & Nashville, known to employees as "the Ellen N." In its huge Boyles classification yards, three miles from downtown, long trains of ore and coal from its 15 branches in the Birmingham area are broken up and remade into longer trains to roll down to the blast furnaces, or northward toward the cities of the East. Birmingham ore is of a very high quality, commanding exceptional prices at eastern markets.

L&N's Birmingham network is composed mostly of the old trackage of the Birmingham Mineral Railroad, constructed in the '80's to serve the many coal mines and furnaces. The original trackage was an 18½-mile loop about the base of Red Mountain. In 1890 the Birmingham Mineral with its various connections had a closely woven network of some 150 miles, all within the Birmingham area. Many of these spurs and branches have been moved to follow mines, some have been abandoned, and several have been sold to other roads, but in traveling over the city we still cross and recross many of these tracks today. In the old days, most of L&N's branches boasted passenger runs, but now only the Anniston Branch is served by passenger trains.

The L&N shops at Boyles are large and modern, and the car repair shop here is one of the finest in the country. Large switching yards and facilities are maintained at Bessemer, Ensley, and just south of the L&N's passenger station.

As the first road to enter the city from the

The Seaboard's Cotton States Special is one of the finer trains into the Birmingham district. It is shown here, pulled by a class P Pacific, near Irondale. It carries through cars from New York, Washington, and Norfolk and arrives in Atlanta at 8 a. m., Birmingham at noon.

A Central of Georgia Mountain type locomotive pulling the Seminole, Florida-Chicago train, into Birmingham over the tracks of the Southern. At this point left-hand operation is in effect.

northwest, the Frisco approaches Birmingham in a series of easy curves and grades. Its shops and yards are a short distance west of the sprawling Finley Shops of the Southern and, while more compact in layout, they are ample to handle the storage and switching of the Illinois Central and the Central of Georgia. The Frisco operated its first trains into the district on the old Kansas City, Memphis & Birmingham. This road was made a part of the Frisco system in 1901.

The Southern's *Sunnyland* and *Kansas City-Florida Special* are handled north and west of Birmingham by the Frisco. The Central of Georgia, controlled by Illinois Central, began operation July 1, 1888. All trains of the Central are operated over the Southern from Weems, nine miles from Birmingham, into the terminal. Trains of both companies are operated on the left-hand track. The CofG is also interested in the Mary Lee connecting road which joins the Sloss-Sheffield Steel plant of First Avenue to other plants in the north and east of Birmingham.

The Illinois Central, like the Central of Georgia, uses the tracks of other railroads to reach Birmingham. All trains of the IC use the tracks of the Frisco for the 40.9 miles from Jasper to Birmingham by a lease arrangement, and for another 41 miles beyond Jasper the IC runs on Southern tracks.

The Central of Georgia and the Illinois Central maintain their own shops near the Frisco's fine plant in East Thomas, while the switching and classifying yards of all three roads are worked by joint agreement. It is not unusual to see switch engines of all three roads working side by side. By a similar arrangement, the Frisco, Illinois Central and the Seaboard run their freight trains into the Bessemer district over the lines of the old Kansas City, Memphis & Birmingham.

The Seaboard Railway tracks from Atlanta enter Jones Valley through Red Gap along with the Southern. The five tracks here are not more than several feet apart at the narrowest part of the gap. Here at the crest of the grade is one of the finest places around Birmingham to watch trains and make pictures—in peacetime. Don't try the photography while the war is on!

The Seaboard entered Birmingham in 1905. The original road, the Birmingham & Atlanta Air Line, acquired the old East & West Railroad, whose line extended from Cartersville, Ga., to Coal City, Ala., and which had been running trains since 1883. Seaboard shops and yards are just a few blocks south of the terminal.

The Atlanta, Birmingham & Coast first operated into the Birmingham district over the tracks of the Louisville & Nashville from Pelham before its own line was completed on June 1, 1910. The AB&C leaves Birmingham headed west and only turns eastward after reaching Bessemer. It crosses the L&N at Pelham, some 24 miles south of Birmingham. The two passenger trains are locals and the many freights serve the agricultural and manufacturing centers of east Alabama and central and south Georgia.

The only other trunk line into Birmingham is the freight extension of the Gulf, Mobile & Ohio, which does not operate passenger service on this division. Like the IC and the Central of Georgia, the GM&O gets into Birmingham through trackage agreements with other roads, using Southern tracks from Birmingham to Haleyville and IC tracks from Haleyville to Corinth, Miss., where connection is made with its own main line. The GM&O operates from the Southern's 37th Street Yard and all switching is done by the Southern.

The GM&O schedules a single freight a day into Birmingham, arriving late in the afternoon. This hotshot is operated as a connection of mainline No. 29, and it and its sister train, BM-28, are handled as follows: From Birmingham to Parrish, Ala., it bears the Southern number 59. From there to Haleyville, its

This little frame depot at Elyton, two miles southwest of downtown Birmingham, is the terminal of the Atlanta, Birmingham & Coast. It is at one end of the AB&C's freight yard, and is used by two trains a day.

number changes from odd to even, and appears in the timecards as Northern Alabama's (Southern) 58. It takes to IC iron at Haleyville, and assumes the IC designation 66, which it carries until it reaches Ruslor, Miss., on home iron, and acquires the title BM-28. Thus, in less than 200 miles, the train assumes four different numbers.

The Birmingham Southern Railway and the Birmingham Belt Railroad are both common carriers engaged in switching and interchange work. Birmingham Southern, once owned jointly by the L&N and the Southern, operates a number of steam locomotives and several Diesel-electric switchers. The Tennessee Coal, Iron & Railroad Company now controls the Birmingham Southern and the BS is a go-between for the TCI's yards and delivers finished products from this company's plants to the yards of other roads. The Birmingham Belt is owned jointly by the Frisco and Illinois Central and is mostly just what the name implies—a belt line around the commercial district, serving large wholesale houses, plants, mills and mines.

Besides the common carriers, many large companies own and operate their own switch engines and in some instances regular trains. Heading this list is the Tennessee Coal, Iron & Railroad Company. TCI, as it is known around the city, had much to do with the early growth of the district. To move raw materials to, and finished products from, its mines, rolling mills, blast furnaces, coke ovens, wire mills and sheet-metal works required a mammoth amount of transporting. A glance at the map will show the extensive coverage of the TCI rails.

TCI's name is an oddity. The company is a subsidiary of United States Steel and the name doesn't mean a thing. It goes nowhere near Tennessee; it sells no coal or iron and is not a railroad in that it is not a common carrier. But it does operate quite a railroad for its own use. This is also true of the Woodward Iron Company, Republic Steel, Sloss-Sheffield, American Cast-Iron Pipe, and many others.

RAILROAD motive power in the area runs the gamut from small tank engines to the Diesel-electrics which many of the private companies are using. Most switching by the trunkline roads is done by six- and eight-wheel switchers, although in the AB&C yards most of this work is done by Ten-Wheelers. Most connoisseurs award the vote for most beautiful locomotives to the Southern for its big green and gold-striped Pacifics and to the Frisco for its clean-lined, oil-burning Mountain type engines.

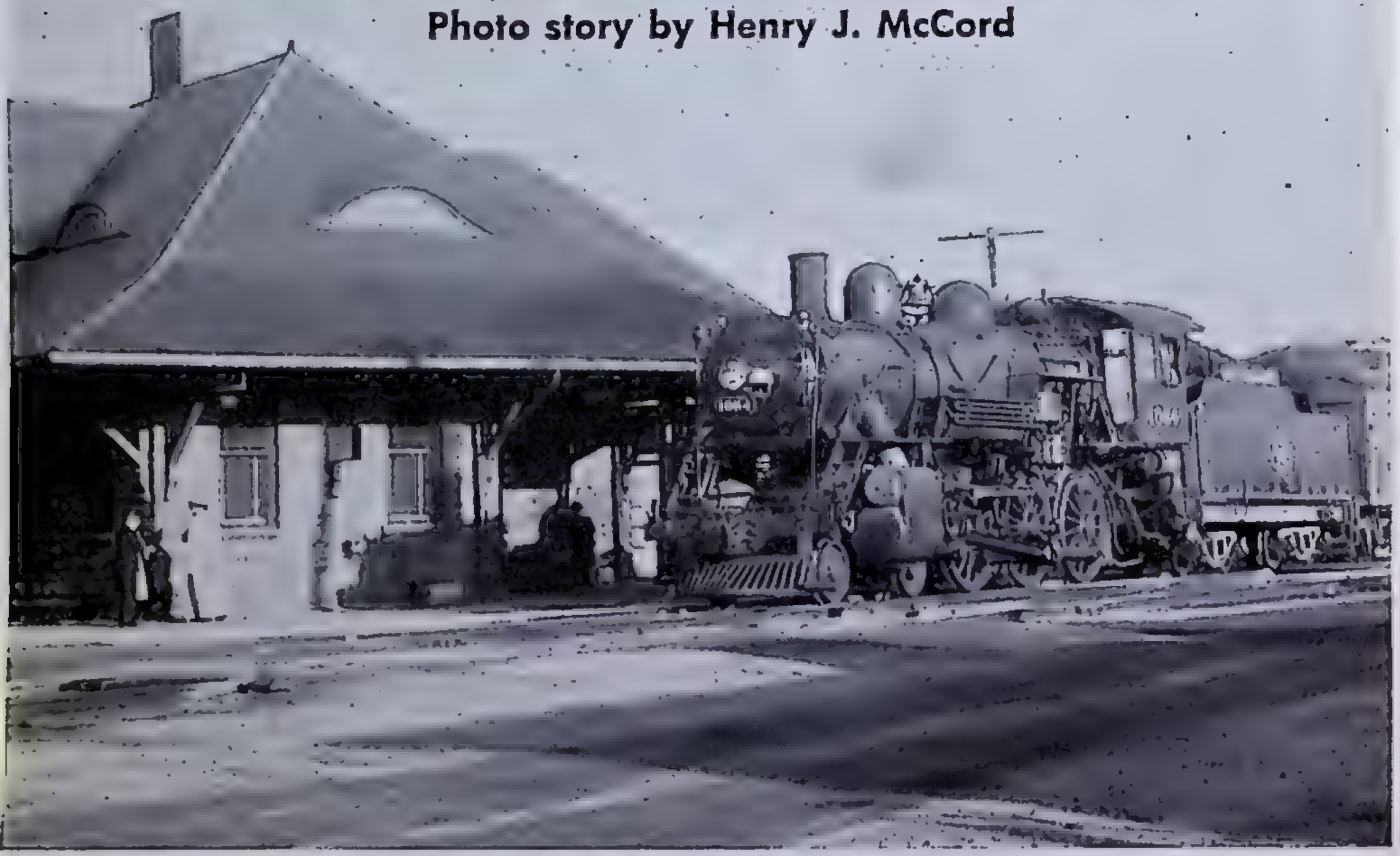
Freight locomotives range from the Consolidations, light Mikes and 2-10-2's used by the Southern, IC, Seaboard and TCI to the 2-8-8-2's of the Southern on its Atlanta division. One can even see Chicago & North Western 2-8-2's and former Erie jobs pulling into the Southern's 37th Street Yard. The Southern is also using some of its new three-unit Diesel freight locomotives on this division.

Birmingham's heavy industries, nearly dormant during the depression, have once more sprung to life. Railroad yards are crammed to the switches with cars, and the railroads of Birmingham are efficiently, if not quietly, helping win the war.

One doesn't have too look far to see the parades. Almost anywhere one turns are the tracks. But as a grand finish to any visit to Birmingham, take a street car on the suburban run to the huge iron statue of Vulcan, atop Red Mountain to the southeast of the city. Climb to the observation balcony and look out across the sprawling networks. Down the center is the thick main artery of Southern and L&N tracks. L&N and Terminal stations are dark patches of trackwork. And perhaps, if you're lucky, the sun will glisten from the shining stainless-steel cars of the *Southerner* as it glides across the panorama—symbol of modern transportation in the rail city of the South.

A Day at Canton, S. D.

Photo story by Henry J. McCord



LINES of the Milwaukee Road radiate in all four directions from Canton, S. D., south to Sioux City, north to Sioux Falls, east to Mason City and west to Rapid City in the Black Hills. Train schedules are arranged for connections at Canton, and even engine runs depend upon these connections. For instance, the engine which pulls the Rapid City section of the *Sioux* from Canton to Mitchell starts its day at 8:20 a. m. at Sioux Falls (above), 21 miles away. It pulls a combination car as train No. 304, and at 9 o'clock backs off the wye into the Canton station (top of right page). It moves to an outside track to be in the clear for the *Sioux*, which is due at 9:45.

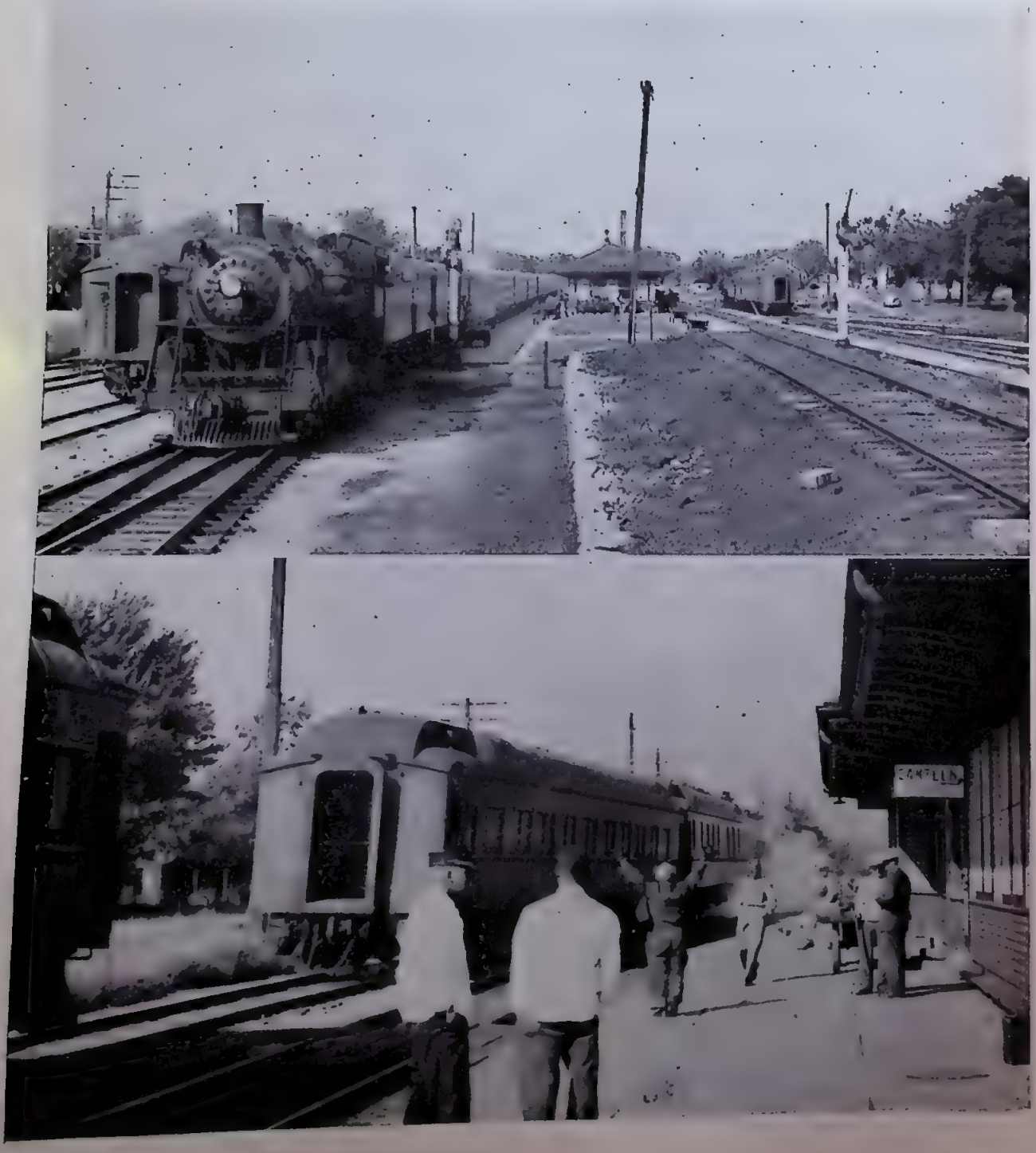
An hour later the *Midwest*

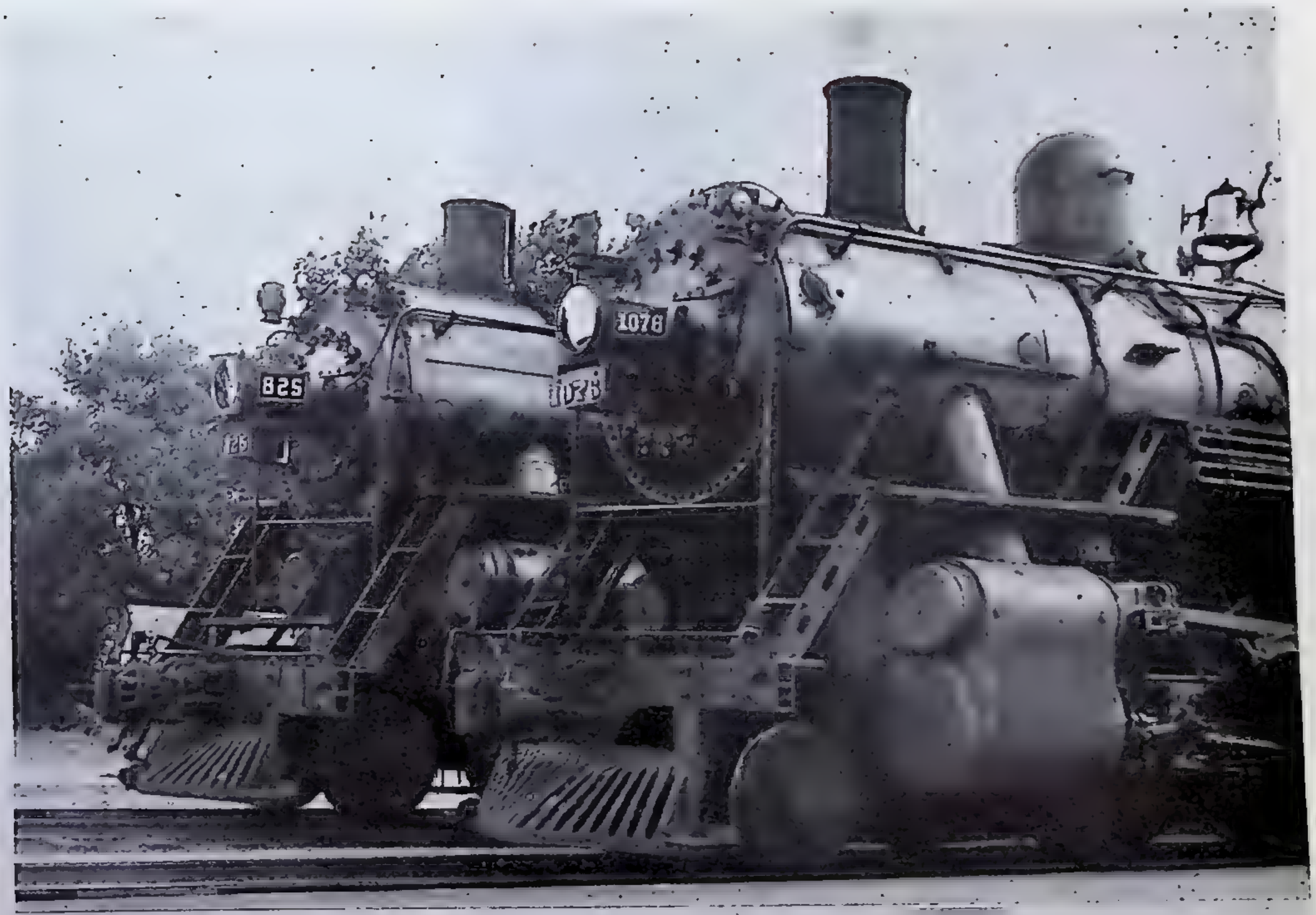
Hiawatha follows No. 304 out of Sioux Falls (bottom of left page) and into Canton. It connects at Canton both with the westbound *Sioux* and with eastbound No. 2 from Rapid City, which pulls into the clear on an outside track at 9:30. By 10 o'clock, when the *Midwest Hiawatha* threads her way into the Canton station, the scene looks like the bottom photo. Reading from left to right are eastbound No. 2, the *Midwest Hiawatha,* bound for Chicago via Sioux City and the Omaha main line, and the engine which came in with No. 304, now switching onto the front of the westbound *Sioux,* headed for the Black Hills.

The westbound *Sioux* is really switched at Canton. Not only does it get a different engine, but part of it is taken off to go to Sioux

Falls. After the *Hiawatha* leaves, the cars which came in on No. 2 are switched (bottom of page) to the Sioux Falls section of the *Sioux* along with the combination car which came down on No. 304, and this makeup goes northward to Sioux Falls. On some mornings the streamlined Hiawatha engine fails to make an appearance and then the 10 o'clock scene at Canton looks like the photo immediately below.

It is 10:38 before the activity quiets down with the departure of the Sioux Falls section of the *Sioux*. The next peak of activity comes in late afternoon when the *Sioux* leaves eastbound for Chicago via Mason City and Marquette, Ia., and the *Arrow* leaves for the same destination via Sioux City and the Omaha main line. The *Sioux* is shown at bottom of opposite page leaving Sioux Falls for Canton at 3:35 p. m. It will leave Canton at 4:10 and the *Arrow* follows it from Sioux Falls at 4:40 and leaves Canton at 5:14. The engine crew which takes the *Sioux* away from Sioux Falls in the after-

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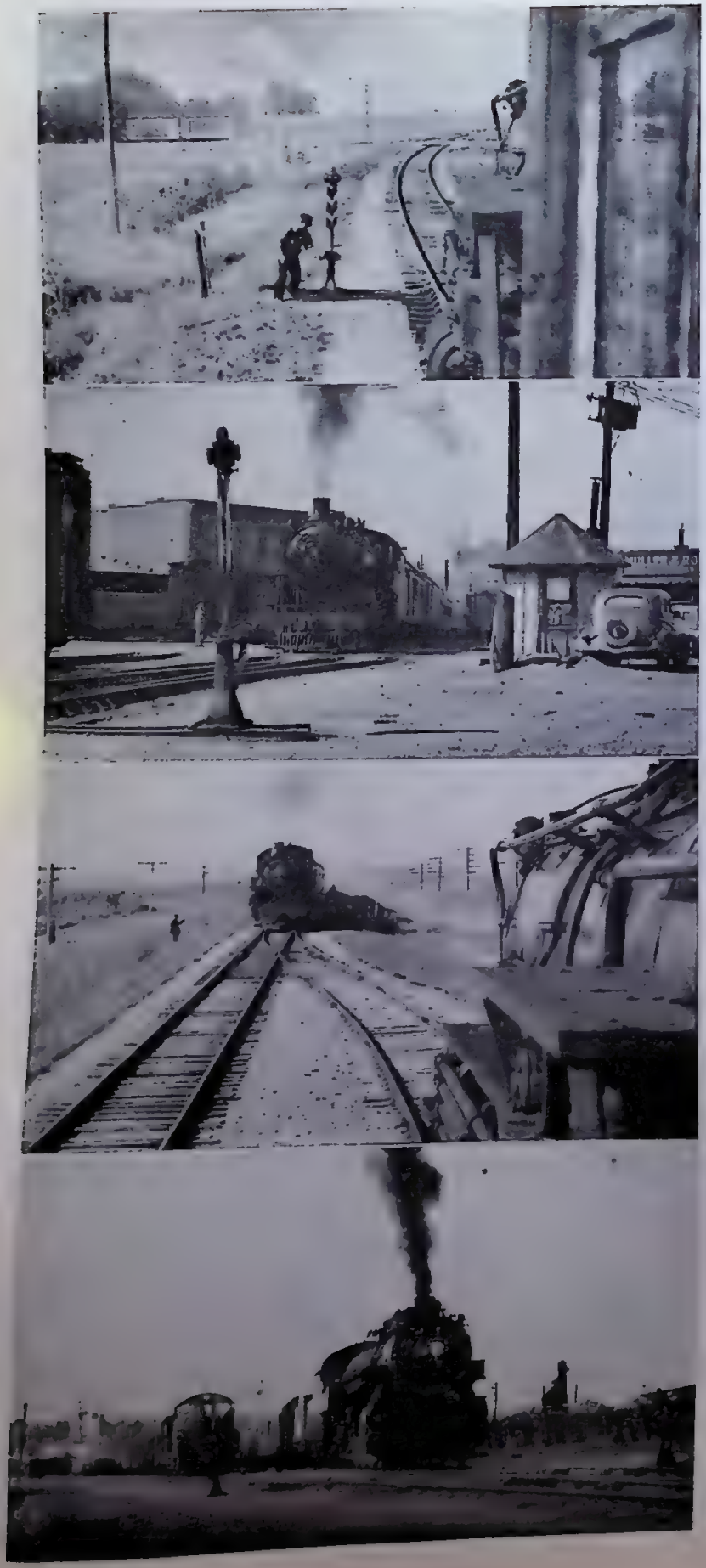


noon covers the 21 miles between Canton and Sioux Falls four times a day. This crew takes No. 304 down in the morning, goes back on the westbound *Sioux,* takes the eastbound *Sioux* south, and then finishes up on No. 303 which leaves Canton at 4:30 p. m. Sounds monotonous, but for the outsider it's an interesting set of trips, with the activity at Canton thrown in for good measure.

The photo at top left shows a brakeman of No. 303 throwing the wye switch before heading out from Canton to Sioux Falls on the last trip of the day. The train still consists of the same combination car which started off on No. 304 in the morning, and which has made the same two round trips as the crew. On the previous trip down to Canton the train was much more impressive, the heavy eastbound *Sioux* being made up of the equipment which came in from the Black Hills in the morning and which we last saw being switched just after the departure of the *Midwest Hiawatha.* At Harrisburg (second photo from bottom), No. 303 goes into the siding for the eastbound *Arrow.* Well-maintained roadbed permits 70 mile-an-hour operation. Trainman obeys rules as he stands well away from train on opposite side of track from switchstand.

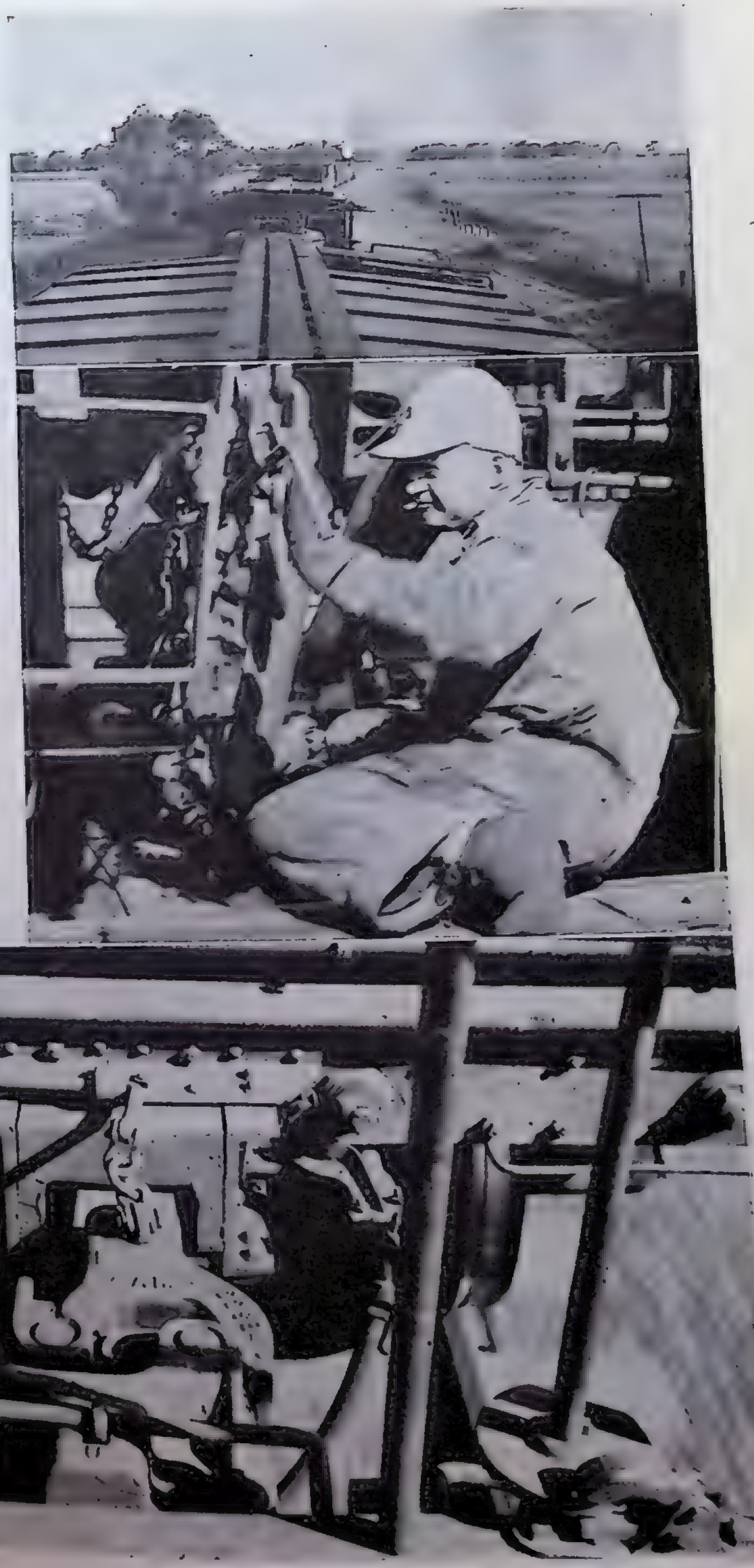
Passenger trains aren't the only kind in this part of the country. Every afternoon except Sunday the well-known twin-tendered meat train of the Milwaukee leaves Sioux Falls (bottom, left) at 4:30, arriving in Chicago the next morning. Even before the war, red points were given this kind of service.

While Canton is the center of Milwaukee Road activity, Sioux Falls is a much larger city (about 40,000 population) and

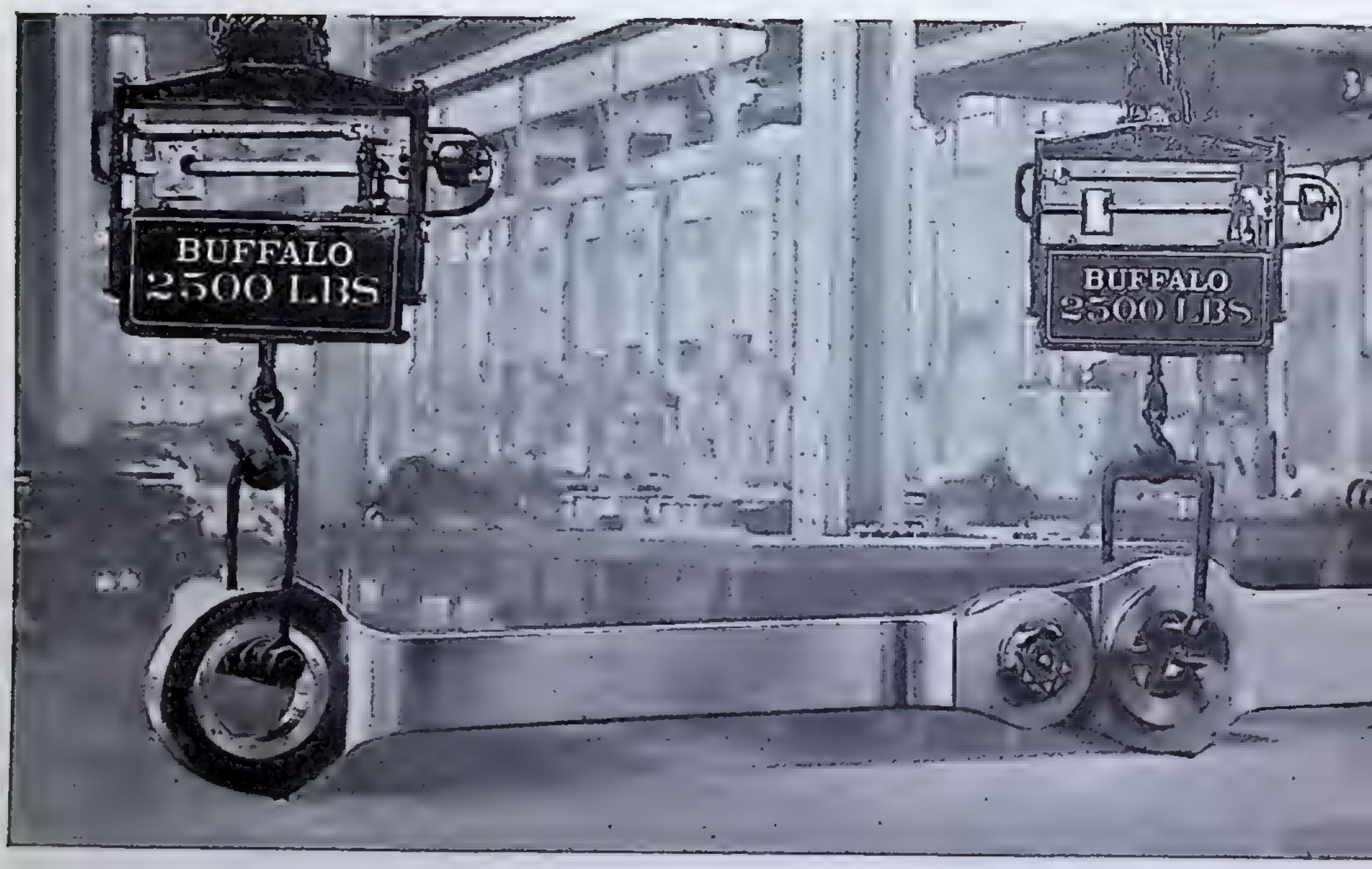
more of an all-around railroad center. It is served by the Omaha (North Western), Illinois Central, Rock Island, and Great Northern, in addition to the Milwaukee, and makes a good headquarters for a few days in the land of the granger roads. All five roads have passenger service, with train times well spaced through the morning and late afternoon, and the stations all within about half a mile of each other. Besides the day at Canton, short round trips can be taken on Great Northern, and there is considerable choice for the routing in and out.

The freight train scene was taken on a mixed train between Canton and Sioux Falls, while the man coupling a steam connection is working on the preparations for the *Sioux*.

Relaxing on the front platform of a mixed train caboose, watching the couplers work up and down, one's troubles are left further behind with each click of the wheels.



From Rapid City and the Black Hills of South Dakota, Milwaukee Road No. 2 comes through the electric switches at the west end of the Canton, S. D., station to make connections with the Midwest Hiawatha for Chicago.



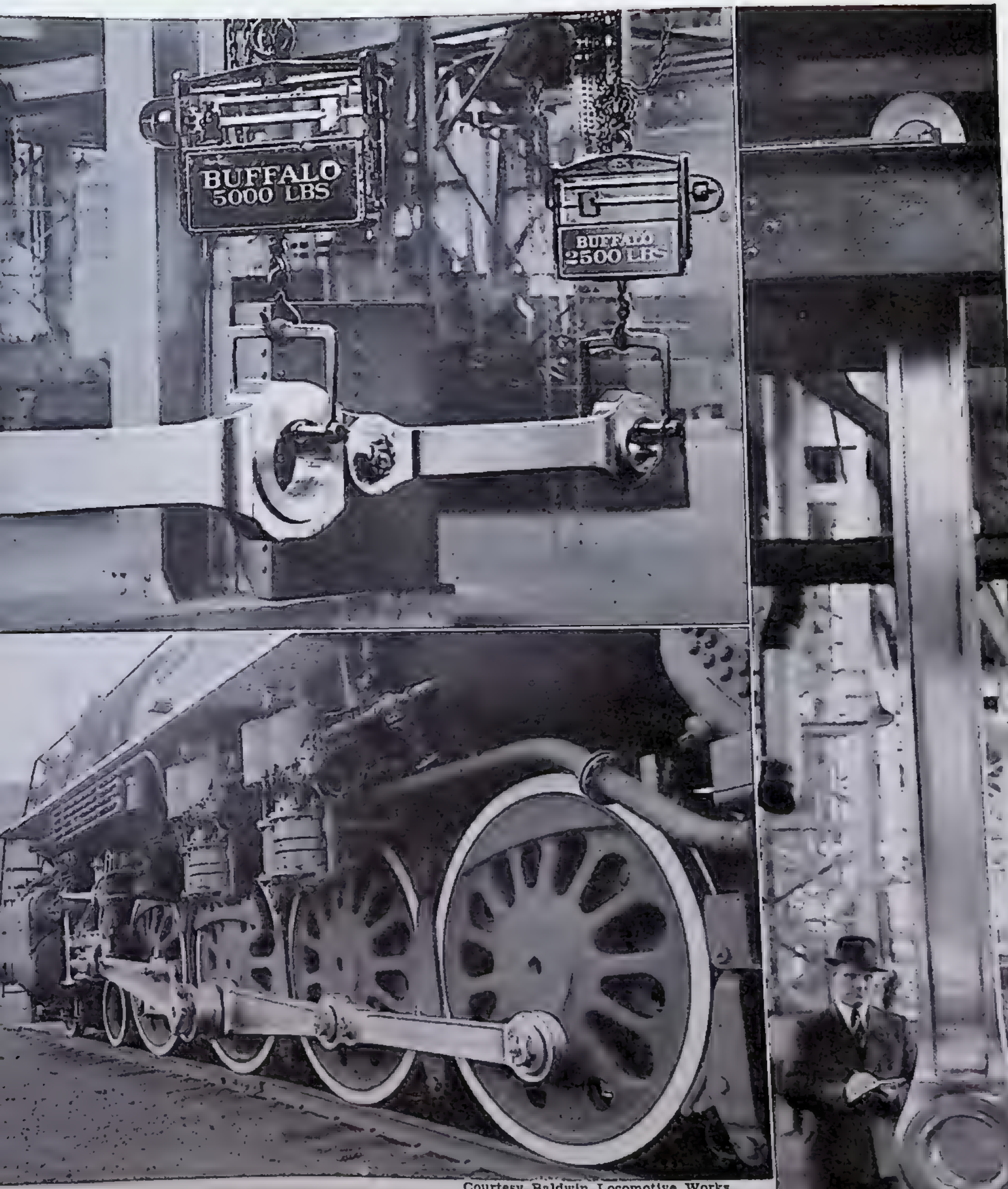
Counterbalancing Connecting Rods

THE ever-increasing speed demanded by modern transportation has brought with it the necessity for greater accuracy in the counterbalancing of locomotives. This means that great care must be exercised to determine the true revolving weights of the side rods and the main rod, and the proportion of these weights acting on each crankpin.

The proportions of the weights of the side rods acting on each pin are carefully determined in the Baldwin Locomotive Works shop by suspending a set of rods, complete with bushings and knuckle pins, from accurately calibrated scales, as shown in one of the photos. The main rod presents a more complex problem, since it is partly revolving weight, which can be fully counterbalanced, and partly reciprocating weight, which can be only partially counterbalanced. The generally accepted rule is to use as revolving weight on the main pin seven eighths of the scale weight at the back end of the rod. This checks out very well for the average design, but with modern high-speed locomotives it is nevertheless true that the proportion will vary slightly and it is desirable to determine the proportion of weight which is revolving with greater accuracy.

Baldwin, early in 1939, adopted a method for experimentally determining the true revolving weight of any design of main rod. The front and back ends of the rod are first weighed by suspending them from two scales similar to those used for weighing the side rods. A specially designed clevis and shackle is then fitted to the cross-head end of the rod and it is hung from two parallel I beams located sufficiently high to permit the rod to swing free of the floor, as shown in the vertical photograph.

The suspension is so designed that the rod swings absolutely free on three sets of ball bearings. The actual determination of the revolving weight of the rod is then made by swinging the rod like a pendulum and using a stop watch to record the exact time for any large number of swings. From this it is possible to use the standard pendulum formula to determine the center of percussion of the rod, and once this center of percussion is determined the revolving



Courtesy Baldwin Locomotive Works.

weight of the rod can be found by using simple arithmetic, since there is a definite ratio between the revolving weight, the overall length of the rod, the weight of the back end of the rod and the distance from the end of the rod to the center of percussion.

The revolving weight of the main rod is added to the weight of the side rod on the main pin, which has already been determined. The remainder of the weight of the main rod is considered as reciprocating weight in determining the amount of counter balance.

The Commission Says Yes

The details of outstanding cases in which the I.C.C. authorized the construction of new railroads

BY WILLIAM FORSYTHE

THE more Rock Island studied the situation, the more apparent it became that something big was going to have to be done. Otherwise, some other railroad would handle traffic promising huge increases in volume. So on August 5, 1925, the railroad asked the Interstate Commerce Commission for permission to build a 145-mile line branching off from the Golden State Route main line at Liberal, Kans., and running southwest to Amarillo, Tex.

The new line would serve no existing cities or towns, but agricultural possibilities existed, and recently discovered petroleum deposits were without railroad service. The line was projected, said Rock Island, to eliminate necessity of double-tracking the existing main line between Tucumcari and Liberal, which would be compelled shortly by increasing transcontinental traffic. The old line's mileage was 204; the new line, Liberal to Amarillo, thence Choctaw route to Tucumcari, would total 259 miles. However, grades on the new line, not exceeding .5 per cent, would be more favorable than on the old one, and through freight trains diverted to the new route would handle Tucumcari-Amarillo business formerly moved in locals, which could be eliminated. Therefore, Rock Island forecast annual operating economies of $300,000.

This doesn't quite add up, as the proposed construction would cost more than laying 204 miles of second track on a roadbed already owned, graded, ballasted, laid and signaled. Rock Island must have had something else in mind.

T&P was talking about a line from its main stem up to Amarillo. Many short lines were being built and others discussed, all fanning out from Amarillo. Settlers were moving into the surrounding territory and drillers were striking oil. The city was to be the gateway to greater panhandle traffic, and much of it would flow between Amarillo and Kansas City. Rock Island's only existing way of meeting Santa Fe's direct-line competition was its roundabout route via El Reno, Okla.

Santa Fe, and Beaver, Meade & Englewood, subsidiary of MKT, opposed the Rock Island's petition, perfunctorily. Having no arguments, they made some. Santa Fe pointed out any railroad built in Texas must be chartered by the state of Texas, whereas Rock Island was an Illinois and Iowa corporation. The Commission, however, stuck to the point. This was an application to determine, said the Commission, whether public convenience and necessity required construction of the line, which would be decided. Legalistic troubles could be left to Rock Island for handling later.

Both opponents said they wouldn't object were the new line built straight north from Amarillo, to join the main stem at Guymon or Texhoma, 40 and 60 miles southwest of Liberal. But as projected, the new line would invade their territories. Rock Island retorted that while no such proposal was before the Commission for adjudication, it was possible to say such a line could not get down to Canadian River bed and out again without exceeding the .5 per cent grades desired; Liberal was a division point, much better place for a junction; and agricultural possibilities due north were poorer than northeast of Amarillo.

Santa Fe then interjected gratis a lesson in railroad economics, saying it would be cheaper to maintain a double-track railroad than two separate single-track lines, widely separated. The report merely mentioned this objection, without comment. It was Rock Island's money, not Santa Fe's.

The Commission thought anticipated economies had been exaggerated. Trains over the new line would be time freights, whose tonnage is sacrificed for speed. With such trains, ruling grade limitations are elastic. However, as there would be some economies, and the evidence didn't show anyone would be hurt, the certificate was issued May 4, 1926. The report said nothing about possibilities due to the enlarged traffic stature of Amarillo.

WHEN Southern Pacific, through a subsidiary, sought entrance into Rio Grande Valley of

Texas, it met real opposition. The railroad then in possession put up such a fight that three members of the Commission found against Southern Pacific.

May 9, 1925, San Antonio and Aranas Pass Railroad applied for certificate of public convenience and necessity permitting it to construct an extension of its line southward from Falfurrias, Tex., to Rio Grande River at a practicable crossing. SA&AP was a subsidiary of Galveston, Houston & Harrisburg, itself a subsidiary of Southern Pacific.

Missouri Pacific and subsidiaries NOT&M and StLB&M (Gulf Coast Lines) intervened in opposition. The state of Texas and many local-interest civic bodies were heard.

This railroad would furnish general freight, passenger and express service to territories not already served, would bring additional service to territory then reached by rail, and would obtain additional traffic for SP system.

The line would parallel Gulf Coast Lines, 30 miles away. For 60 miles south of Falfurrias the land was given over to open range stock ranching. Evidence conflicted as to traffic possibilities, but there was no statement this wilderness mesquite could ever support a railroad. Real support was to come from the valley.

Rio Grande Valley is one of the most fertile spots on earth. Sixty miles long east and west, its southern border is Rio Grande River; 20 miles wide, its eastern end is Gulf of Mexico. By 1926, existing systems were capable of irrigating 450,000 acres of land and already had reached 429,000 acres.

Citrus production had begun about 1921. During 1922-23, 108 carloads moved out of the valley, and this was only a starter. In following years, 225 cars, than 703 cars were shipped. Some 1200 carloads were anticipated for 1925-26. New trees had been planted in very great numbers. In each of the two preceding seasons, 12,000 carloads of fresh vegetables had left the valley, and this production also promised to increase. During the past season, 110,000 bales of cotton had been produced. "The uncontroverted evidence is that this district presents most unusual opportunities for successful agriculture and that the limits of its productive opportunities are far from having been reached."

A state government intervening before the Commission usually acts through its own public utility commission, accepting as a truth of existence the Commission's omnipotence. But here, the state of Texas was represented by its

Commissioner of Agriculture, and the purpose was to challenge the Commission's jurisdiction. If that question were decided against the state, then the state would support the application.

Challenge of jurisdiction was based on an old amendment to the SA&AP's Texas charter authorizing it to build from Alice, end of track to the Rio Grande River. The line had been extended to Falfurrias and graded for 14 miles more, and the company had always intended to resume the track laying. It was contended therefore the extension was not subject to convenience and necessity (enacted 1920), and three formerly decided applications were cited in substantiation. In those cases the Commission had disclaimed jurisdiction because *bona fide* projection and construction had begun prior to effectiveness of convenience and necessity.

In this case, said the Commission, it was true that SA&AP's charter contemplated construction to the Rio Grande, and the line had indeed been completed to Falfurrias. But it was also true that for more than 20 years thereafter, nothing was done toward extending it southward. The long lapse of time removed from this petition application of the principle that had governed the cases cited. The Commission accepted jurisdiction.

Southern Pacific's main stem ran from Houston to San Antonio and on west, with a branch to Rio Grande at Eagle Pass. South of this east-west line was a part of Texas almost as large as the state of Louisiana, and virtually all of it was Missouri Pacific hinterland. Its Gulf Coast Lines ran from Houston to Corpus Christi and Brownsville; its SAU&G joined Corpus Christi with San Antonio; International-Great Northern connected San Antonio and Laredo.

Down the river from Eagle Pass were only two crossings, Laredo and Brownsville; Missouri Pacific reached them both. (Laredo was also accessible via Texas-Mexican Railway, but it was a weak line.) This Missouri Pacific monopoly was highly displeasing to the Commission.

Gulf Coast Lines' single-track railroad from Houston served the valley, and connected with National of Mexico at Brownsville. GCL had recently been absorbed into Missouri Pacific system, enabling one-line handling to San Antonio and crossings of Missouri and Mississippi rivers. GCL, already operating more than 200 miles of track in the valley, was building more.

Perishables moved in heavy volume for six months each year, beginning in mid-December and ending in June. The shipments were handled in regular trains until 20 cars were offered in one day, then in special trains. One train could handle 75 cars, and three such trains were the most that had been handled out of the valley in one day. A schedule of 92 hours from Harlingen, the concentrating point, was published to St. Louis; and out of 240 trains operated in the season just ended, no train had been late and many were ahead of schedule.

Refrigerator cars to handle this business were furnished by American Refrigerator Transit Company, jointly owned by MoPac and Wabash. This company owned more than 9000 reefers and could borrow from others when pressed for equipment.

Missouri Pacific had loading sheds all over the valley. No acreage was more than seven miles from a shed; most land was within five miles of one. There was a mile of railroad in the valley for every square mile of acreage, and more track was being laid. Missouri Pacific had expended large amounts of money, both in and out of the valley, to enable safe and expeditious handling of valley perishables. The claim it could satisfactorily move 40,000 cars per year was not disputed.

Missouri Pacific argued now the valley was beginning to produce in volume profitable for one carrier but not for two, dividing the traffic could only mean the special train service would begin later and end earlier. The carrier had been through years of lean development, and now this traffic promised profitable handling, MoPac should not be compelled to divide it with another line, unneeded, that had not assisted in the valley's development. (StLB&M had reached the valley, then a waste in 1904.) The road was rendering good service. This latter claim the shippers and civic representatives had to acknowledge correct, even though they were arguing for the new construction.

Southern Pacific said its Pacific Fruit Express Company's 30,000 refrigerator cars would benefit valley shippers. It pointed out Gulf Coast Lines might go out of business occasionally because of storms, drifting of sand over the tracks, bridges burning, operating troubles that can tie up any single-track line. The Commission noted this had happened, thought access to an alternate transportation route would benefit the valley.

Gulf Coast Lines, said the Commission, had become highly profitable even before the valley developed as a source of traffic. In view of the development then in process, and considering also Missouri Pacific's permanent advantages in the valley, it was most unlikely the new line would seriously impair GCL's earning capacity. The certificate was granted July 7, 1926.

Three commissioners dissented, expressing fear that entrance of SP into the valley would weaken Missouri Pacific, only recently rounded

Optional routes

Each month TRAINS prints a brief listing and survey of available routes between larger cities.

Buffalo and Montreal:

New York Central—Via Utica and Adirondack Division. Night trains with through sleepers; day train; change of coaches at Utica on all trains.

Canadian National, Canadian Pacific—Via Toronto. Usual route Buffalo-Toronto is TH&B line, but CN via Suspension Bridge may be used. Three trains daily each way Toronto-Montreal, plus certain locals. These carry coaches and on night trains, sleepers. Connections from Buffalo reasonably good. Both Canadian roads operate several offices in United States.

Canadian National—Via Suspension Bridge. Overnight trains carry sleepers Suspension Bridge to Montreal; connection to the Bridge via NYC.

Delaware & Hudson—Via Albany and NYC Buffalo-Albany. No through service.

Rutland—Via Albany and NYC Buffalo-Albany. No through service.

Because of the difference between U. S. and Canadian fares and the difference in the ratios between one-way and round trip, and coach and first-class, all routes do not have the same fares. However, the first three routes are comparable.

Service between Toronto and Montreal is pooled, and both CN and CP contribute equipment to through trains. Both roads permit travel via Ottawa if desired.

into its present system size. But as things turned out, the valley's production became so utterly colossal (no other term is accurate) that as MoPac's traffic multiplied, Southern Pacific prospered, too.

Southern Pacific, as revealed in 222 I. C. C. 390, a rate case decided in 1937, spent $6,400,000 to build the line which now reaches Rio Grande River at Brownsville and serves the cities of Edinburg, McAllen and Harlingen, while PFE put up a third of a million for its Edinburg ice plant. In the year 1935, SP handled 5554 cars of all traffic from the valley, and 3259 of them were citrus and vegetables. Meanwhile, total traffic had doubled again. MoPac's expenditure of $7,500,000 in the valley alone for feeder tracks, loading sheds, other facilities (bringing it the permanent advantages cited by the Commission) kept for it about three fourths of all traffic. Because of the valley's fabulous agricultural productivity (52,000 carloads in season of 1943-44), Missouri Pacific didn't lose; it only shared the increase.

A FEW years later, Southern Pacific found itself on the receiving end of a territory-invasion petition; this time, somebody else's ox was gored. Southern Pacific's battle will long remain a classic of determination.

On February 14, 1929, Great Northern applied for permission to construct a railroad southward from end of track at Klamath Falls, Ore., 80 miles to Lookout, Cal.; and, on the same day, Western Pacific sought authority to build from its main line at Keddie 112 miles northward to make an end-to-end connection with Great Northern's extension. Shortly thereafter, both lines amended their applications to provide for connection at Bieber, 11 miles south of Lookout, changing the mileages to 91 and 101, respectively. Six months later they petitioned for joint construction or acquisition and operation of a line from Lookout 36 miles west to a connection with McCloud River Railroad at or near Hambone.

The applications were supported by 66 persons, firms, associations, government bodies and were opposed by 15 others. Applicants were represented by 10 attorneys and officers, 12 appearing for opposing carriers. No less than 77 witnesses were heard in behalf of their employing intervenors. The report itself required 60 pages. This was one of the most important applications ever considered under convenience and necessity.

Applicant carriers hoped to provide the benefits of competitive transportation, make a bridge or link between their main lines, and secure new traffic for their systems. They promised to provide high-class passenger train service, eliminate the Shasta arbitrary, open the Spokane gateway and generally furnish public benefits that follow establishment of competitive railroad service.

Costs were estimated at half a million for the McCloud branch, $4,500,000 for Great Northern, $10 million for Western Pacific. Western Pacific's line was 10 per cent longer than Great Northern's, but because of its mountainous terrain, cost was set at much more than double. Great Northern had the cash, and Western Pacific would sell five per cent bonds.

The new lines would have access to vast lumber traffic. Mills at Klamath Falls promised annual output of 28,000 carloads. Seven thousand cars a year originated at Westwood, 6500 at McCloud. This traffic was and would remain susceptible to handling by Southern Pacific. Applicants expected to secure much of it, plus an additional 8000 to 10,000 carloads from mills to be erected along the new lines.

McCloud River Railroad was owned 10 per cent by McCloud River Lumber Company and largely by lumber company stockholders. Traffic manager of the lumber company was president of the railroad. From SP's main line, McCR ran 17 miles east to McCloud where the mill was located, and continued another 37 miles to a place called Hambone. The *lumber* company had a logging spur running about 24 miles east from Hambone and was building another 12 miles to Lookout, where it would join the new construction. This lumber road the applicants sought to acquire, modernize, and jointly operate as a branch, the lumber company reserving a trackage right for transport of its employees, logs and supplies upon payment of seven cents per loaded car mile.

Outbound lumber was expected to bring in 28 per cent of all revenue. Products of agriculture, mostly California perishables, would yield 24 per cent. Transport of minerals would account for 19 per cent and miscellaneous traffic for 25 per cent of the revenue. The lines would move 50,000 carloads of freight the first year, 74,000 cars the fifth, divided about evenly between GN and WP.

Southern Pacific and Union Pacific were principal opposing intervenors. They assailed forecasts of applicants in a 'tis-'taint interplay.

Such tactics are so usual as to be routine. They also made counter offers, conditioned upon denial of the applications, that were most unusual, and bespoke an intensity rarely seen.

A word about their attitude. Southern Pacific had "made" California and western Oregon. Its Central Pacific was completed from California to Utah junction with Union Pacific in 1869, and for some 30 years, it was the only railroad into California. Business and industry followed the rails; without them, inaction. Then regulatory legislation was enacted. Competing rail lines reached Oakland and Los Angeles. El Paso & Southwestern attacked in New Mexico and Arizona. The Panama Canal was built and intercoastal steamers began operation. Motor trucks appeared. Pipelines. Airlines. By 1930, steamers were carrying 91 per cent of all tonnage between California and Columbia River. All this time SP was paying taxes on its property devoted to common carrier transportation, and on the timber lands granted as a collect-later inducement for building the line north of Portland. Why shouldn't SP oppose this attempt by outsiders to move into its territory and take its business?

SP did try, mightily. The new lines, said SP, would cost more than applicants had forecast; they wouldn't shorten distances; revenues wouldn't come up to expectations; and public benefits had been overestimated. SP claimed, and the Commission agreed, its service had been generally satisfactorily.

The detailed cost estimate submitted by SP exceeded that of applicants by $3,400,000.

Revenues, claimed SP, would fail by more than 33 per cent to equal the expectations. Building into this territory, barren of all traffic save lumber, would "create" an absurdly small amount of business and no realist would count on its increase. The traffic north of Chemult was already available to Great Northern and should not be credited to the new construction. (This claim is analyzed below.)

Southern Pacific set its total loss, in the first year, at $6,431,000 in revenue. After further elaborating its conventional-type opposition, Southern Pacific made its counter offers.

If the commision would deny these applications, SP would be agreeable to publishing joint through rates via Flanigan-Western Pacific on the lumber going to Utah and the East. Full diversion privileges would be permitted on perishables shipped to Montana, the Dakotas and Minnesota. The Chemult gateway would be opened to GN for transcontinental traffic originating on SP. This interchange, at through rates, had never been permitted on much of the available tonnage, even though SP claimed the traffic was "already available" to Big G. Great Northern's railroad was there, all right, but traffic just doesn't move in volume at combination rates.

For its part, Union Pacific offered to open the Butte gateway for California traffic going to and beyond Great Northern's eastern terminals. This lucrative business was then moving on Union Pacific's long haul to the Missouri River.

It was applicants' turn to scoff. Mere tariff changes, they said, would never provide public benefits to follow actual construction of the new lines. SP and UP interests would always be opposed to free use of the far northwestern gateways; their dominating position with shippers would prevent escape to rivals of any appreciable volume of traffic. WP and GN attorneys, thus arguing, said they weren't just making this up out of thin air; they'd had experience with Southern Pacific.

Southern Pacific's one-way fare to San Francisco from Portland was $24.33. On round-trip transcontinental tickets routed one way via Portland, SP maintained a "Shasta arbitrary" of $18 additional fare. Applicants announced they would eliminate this arbitrary.

Great Northern and Western Pacific reported they would inaugurate through passenger service from Chicago to San Francisco, serving the intermediate cities of St. Paul, Minneapolis,

Spokane, Klamath Falls and Sacramento. At Spokane the *Empire Builder,* one of the world's finest trains, would divide into two identical sections, one for Puget Sound as then operated, the other for California. Equipment would include the latest and most modern improved Pullman sleepers, observation and dining cars, and coaches.

Additionally, Great Northern was prepared to open the Spokane gateway to all transcontinental lines, including the Canadian lines. A Chicago-San Francisco ticket could be routed any way to Spokane, thence GN-WP, at the charge applying via direct lines.

Southern Pacific's vice-president said few travelers would choose the northern route. But another witness for that line reported its passenger loss would come to two thirds of a million dollars a year. This inconsistency was not overlooked by the Commission.

Southern Pacific claimed elimination of the Shasta arbitrary would cost all western roads $1,1000,000 per year, and there was no point in such giving away of revenue. SP offered to break rates and interchange passenger cars at Chemult with Great Northern in case the applications were denied.

When the subject of access to markets was introduced, outsiders furnished the words. Witnesses included representatives of civic and industry associations, chambers of commerce, public service commissions, shippers. Their testimony was uniformly emphatic. Building of these new lines, they said, would give access to markets of large proportions now denied them by Southern Pacific's insistence on its own long haul, and refusal to open the Chemult gateway. Chemult is a connection between SP and GN a few miles north of Klamath Falls.

Dealers in perishable food products are peculiarly dependent on quick diversions of their commodities, enabling movement out of a low-priced or sluggish market to another, where demand permits quick sale. To the so-called pocket territory (points on northern lines Idaho to Minnesota), California perishables moved in severely restricted volume because there were no diversion privileges except at a rate increase of 27.5 cents per 100 pounds. The average resulting penalty was $87 per car on traffic shipped into the pocket, then diverted beyond. Full diversion privileges were promised by Great Northern.

Lumber from McCloud could not move to Minnesota or North Dakota because SP was holding the rate at 26 cents per 100 pounds higher than Klamath Falls basis. Great Northern proposed to extend the north coast rates to McCloud as origin. The shippers would enjoy other rate benefits from the new construction; it is easy to understand their support.

However, the vice-president of SP averred that any markets available via the new roads could be reached equally as well by rate adjustments and opened gateways which SP was willing to provide, contingent upon denial of the applications.

The new line would assist national defense. It promised to make available "that much" more transportation and to furnish an alternate route for use in case the Shasta line were broken. Its distance from the coast was itself an additional protection against coast or air raids. One witness reported that in time of national emergency, inadequate transport would be available with existing railroads between California and Oregon, unless ample warning had eliminated civilian traffic.

Chief engineer of the California Railroad Commission, allowing for diversion of traffic to the Alturas line, thought Shasta Route tonnage would continue to increase at about the same rate as in the past. This, he said, would mean its practicable capacity would be reached by 1936 or 1937. An official of SP thought the double tracking could be deferred 12 to 15 years. The Commission noted on the one hand a proposal to build a new line of approximately 200 miles in length at cost of $14 million or so. Against this was public desirability of SP later double tracking its road from Gerber to Eugene at cost of something like three times that figure. But no case was ever decided on such over-simplification alone.

Witnesses for both sides pointed to the far West's rapid growth. SP and UP protagonists took this to mean lack of transport had not stunted development. GN and WP men considered it evidence more facilities would be needed.

The Commission uttered on June 9, 1930. There were reasonable prospects of earning a fair return on moderate capital expenditure. People in the far West should benefit from establishment of the new route, diversified car supply, additional passenger service, and development of the local territory. On the other hand, losses to SP and UP would be overcome in a few years by rapid growth of the country. The certificates were granted.

The new lines were built. Shasta arbitrary was eliminated. But the *Empire Builder* never ran to California. By the time construction was finished and the roadbeds had settled, depression was blighting the nation. Passenger traffic diminished. In December, 1933, all railroads west of Chicago and the Mississippi River cut coach fares to two cents per mile, first class to three, reducing revenue possibilities of passenger service without heavy volume increases. Freight trains on the Bieber line did handle passengers for some years in the caboose, or coach in caboose service. By now, even this has been eliminated and (very profitable) freight service only is provided between Klamath Falls and Keddie.

No such clear-cut problem was presented to the Commission for solution when, on December 24, 1924, Denver & Salt Lake Western filed application for certificate that present and future public convenience and necessity required its construction of a railroad. This line would extend from Orestod, on Denver & Salt Lake Railway, southwesterly to Dotsero, on Denver & Rio Grande Western, 41.3 miles.

This was Dotsero Cutoff, third in a series of great projects undertaken to place Denver on a direct railroad route to Pacific Coast. First step, privately financed, was the building of Denver, Northwestern & Pacific Railroad, now the Denver & Salt Lake. Second was the boring, with public money, of Moffat Tunnel by a corporation subsidiary to the state of Colorado. By the time application for cutoff construction reached the Commission, was postponed, argued, then in 1929 submitted for decision, the desires of these and other interested parties had become so interlaced and conflicting that a most difficult problem was posed.

Denver & Salt Lake Railway ran from Denver 232 miles to Craig, Col., via the Moffat Tunnel. Denver & Salt Lake Western, applicant in this case, was a subsidiary of DS&L.

David Moffat built his Denver, Northwestern & Pacific Railroad west from Denver, and *over* the Continental Divide to Tolland, 50 miles out. The road turned north, then west again, and reached Craig 250 miles from Denver. There the money ran out, and construction ended. Local territory was very productive and furnished coal, petroleum and other minerals, and livestock, but impassability of the high line forced suspension of operations every winter. And when operations were possible, they were brutally costly. As a result, the road never prospered. Bankrupt, it was reorganized as Denver & Salt Lake Railroad. Another reorganization occurred with the slightly different railway name being adopted this time. [January 1942 Trains.]

Moffat Tunnel Improvement District was a creature of Colorado's legislature. Its tunnel, when completed, was leased to D&SL on a rental beginning at $345,000 for the first year, increasing thereafter. The first train ran through the tunnel February 14, 1928. D&SL could now operate the year 'round; tunnel rent was less than operations over the hump had cost; the distance was reduced by 20 miles. D&SL stock went up, and stayed up; its owners were looking forward to the time when D&SL would get its western extension to Utah.

D&RGW'S main line, from Denver to Salt Lake City and Ogden, ran 120 miles south to Pueblo, turned west, then northwest. On this line, Dotsero was 341 miles from Denver. Via the new line, Dotsero would be 168 miles away. Thus, building only 41 miles would cut out operation of 173 mountain miles of railroad. The new route would have more favorable grades than Royal Gorge line, only half its total rise and fall. Transit time would be lessened. Increased use of Moffat Tunnel would likely swell its revenues, enabling that facility more nearly to pay its way.

Obviously, the physical problem was simple of solution. Build the cutoff. But chamber of commerce testimony varied according to home location; views of government bodies were not altogether. The aggregations of capital involved, owning great and expensive tools dedicated to public service, wouldn't all prosper alike, no matter how this case were decided.

Western Slope (Grand Junction, Glenwood Springs, etc.) civic bodies urged the petition be granted. So did the Denver Chamber of Commerce, and Moffat Tunnel Commission, adminstering the District's properties. Colorado Public Utilities Commission recommended in favor of the application, conditioned on making a contract to permit Rio Grande to operate under trackage rights between Dotsero and Denver. From Utah came representatives of the Salt Lake City and other chambers of commerce, who said the petition should not be granted if it prejudiced extension westward from Craig of D&SL.

D&RGW Railroad favored the application so long as its own interests were protected. Long

before this case was submitted for decision (it was with the Commission more than four years), D&RGW had begun negotiations with D&SL over terms and methods of handling traffic east of Dotsero. The parties had failed to agree.

D&RGW was in a peculiar position. Once the cutoff was built, traffic over Rio Grande's main line west of Dotsero would be split east of Dotsero between its old main line and the new route. So the Rio Grande said it would prefer to lease the cutoff and run under trackage rights via Orestod to Denver. D&RGW could thereby control schedules, providing for close train connections with lines east of Denver, enabling the necessary strong bid for transcontinental traffic.

Bulk of the railroad's tonnage has always been made up of originated and terminated business (shipments having one end of movement on D&RGW rails) that could not be lost to another railroad. Revenue from these shipments, which are of comparatively low value, will sustain the railroad and do little more. Bridge or intermediate-carrier business is needed if D&RGW is to show a profit; it is handled as "added traffic." The idea is that if five cars, or 10 cars, of "added traffic" are available for movement in a train that must be dispatched anyhow, these additional cars will mean the difference between breaking even or incurring a deficit, and making a profit. Also, from the standpoint of national welfare, unless the Rio Grande does act as a unit in transcontinental routes, it is not fulfilling its function.

D&RGW was operating under handicaps. Union Pacific, with its magnificent property and last-word equipment, was on the north; Santa Fe, once well termed the colossus of roads, of similar physical excellence, was on the south. Both extended hundreds of miles beyond D&RGW terminals east and west, provided one-system handling all the way from Missouri River to Pacific Coast.

The Commission recognized D&RGW's position, remarking, "Any proposal which would tend to produce an injurious effect upon interests of the Rio Grande should be considered very carefully."

The Commission had to weigh, for the immediate and distant future, needs of the people of Colorado and Utah and the less direct needs of all other people in the country; to listen to the pleas of civic bodies from different localities and when they conflicted, try to reconcile them.

Costly facilities, both privately and publicly owned, could be put to better use if the decision were right, sterilized if it were wrong. It was a tangled problem. And seldom does the big contender play the kind of trump card that D&RGW laid on the table.

Rather than interchange traffic with D&SL system on a conventional rate-division basis, short-hauling itself and starving its own Royal Gorge line from Dotsero east, Rio Grande said it would be disposed to build a new line between Minturn and Denver. This alternate "Dotsero Cutoff" would be 124 miles long, would require three years to build; because another "Moffat" tunnel would be needed, cost would run to about $20 million. Such a line would make a through route Denver to Salt Lake City 567 miles long, shorter by five miles than the route considered in this case, all under one owner.

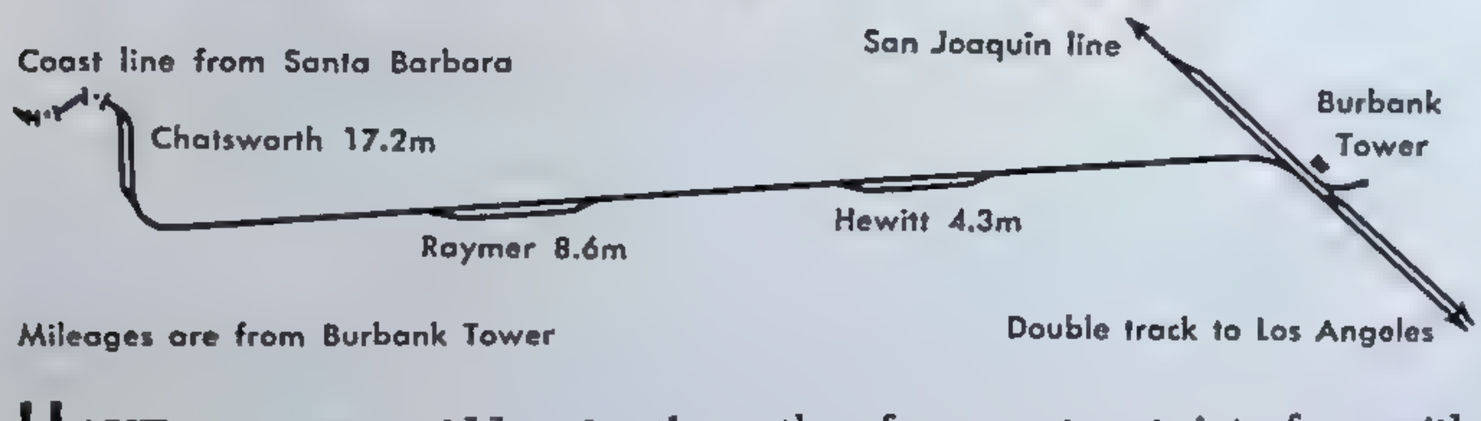
Moffat Tunnel would get its western connection sometime, somehow. That was a certainty. If by Dotsero Cutoff and now, the certificate could go only to the one applicant who was before the Commission. The Commission could say no, or yes; and if yes, it could make the approval unqualified or it could impose conditions. The commission said yes, and imposed conditions.

"Upon the facts presented, we find the present and future public convenience and necessity require the construction of the line of railroad proposed by the applicant upon conditions that the Rio Grande be permitted to operate over said line and over the Moffat road between Orestod and Denver on fair and reasonable terms to be approved by us."

D&RGW was ordered to file within 30 days after April 15, 1929, with the Commission, and to furnish to D&SL copies of a contract providing for D&RGW operation over the cutoff and D&SL between Orestod and Denver. D&SL and D&SLW were ordered to execute this contract or submit within another 30 days an alternative contract draft to D&RGW, all to be subject to I. C. C. approval.

Thus did the Commission decide Finance Docket 4555. The cutoff was built, and has become an important mainline part of D&RGW system, which now includes D&SL.

To Burbank Tower



HAVE you ever ridden in the cab of a big SP Daylight GS-5 type, 4400-class engine hauling the *Lark* when the engineer is trying to make up time?

As you fumble with your watch to look at minutes, imagine the engineer studying his watch for the movement of seconds, and as you roar through the morning fog toward Los Angeles, you wish there were 120 seconds in a minute instead of 60. Here's why:

It's 6:30 a. m. You pull out of Santa Barbara 20 minutes late with engine 4459 and 20 of the finest passenger cars in America. But wait! Twenty minutes is just the start. At East Santa Barbara the fireman leans out and picks up the train order hoop from the operator, and you have news! It's orders restricting the speed of the *Lark* (slow orders they are called) at the big Ventura Bridge and five other points where track improvements are being made. These slow orders mean an additional 12 minutes delay. Rough!

You watch the engine crew studying the orders carefully as they approach the lower end of the Santa Barbara yards. Here double track ends and single track begins. We proceed into the single track, running eastward and therefore must not interfere with westward first-class trains.

The first westbound first-class train we must clear is 99, the *Coast Daylight*. As we pick up speed, we know the battle is about to begin. A battle for minutes, seconds, and for the double track which begins again at Burbank.

Engine 4459 is rocking. Faster and faster. She's up on her toes, driving against the odds of time.

This is what we face—we must either cover this 90-mile stretch of single track to Burbank Junction by 8:43 a.m., the *Daylight's* departure time from the Junction into the same single track, or else go into a passing track somewhere along the line to give the *Daylight* the main line. The latter would mean an additional loss of 40 minutes to the *Lark*.

Let's see . . . 8:43 a.m. We are 20 minutes behind schedule and face another possible 12. 8:43 at Burbank would permit us to be not later than 13 minutes. Can we whittle the 32-minute delay to 13? With the new, not-to-be-exceeded 65 miles per hour limit on this stretch it seems doubtful. But we are really rolling, picking up a minute here and there.

We stop to detrain passengers at Ventura. Then at Oxnard . . .

No. 99 passes Burbank Tower. W. H. Thrall Jr., 6451 Southside Dr., Los Angeles, Calif.

An unexpected red signal. Five hard-earned minutes lost! Still we're fighting and we put back to 65 miles per hour.

Then Chatsworth, and the stage is all set. The operator is on the ground with order hoops in his hand. Tension seems to mount. These orders may mean the siding for us after all—or a few more minutes to make the double track at Burbank. The fireman has crossed the cab and is on the ladder. He hooks the hoop with orders.

"Train 99 wait at Burbank Junction until 8:46 a.m. for first 76."

Three whole minutes more! It's like a reprieve. 8:46 instead of 8:43. We must now decide to go into the siding at Raymer or Hewitt or else make Burbank by 8:46, and it's 17 miles away!

But here's the message with the orders indicating that the siding at Hewitt nearest the Junction is blocked with a westbound freight. We are fast approaching the only siding left—Raymer. That Raymer siding looks good, but means further delay to the *Lark*. Yet to hold the *Daylight* past 8:46 a.m. would bring serious criticism to the *Lark* crew.

We must make our decision now!

We're going to run for it! We throttle 4459 back to an eager, quivering 65 miles per hour. There goes Raymer! There's no turning back now.

Nothing now until the Junction. Nothing but 8.6 miles of single track.

Looks like Hewitt coming up. Yes! There's the freight in the siding. We're moving fast.

We drop down to the Junction quickly. Speed starts to drop and three miles out we make a running test of the brakes. All okay! We come into the long curve to the Junction at 40 miles per hour.

8:44 a.m. Off to the right we see 99 coming up, slowly losing their three minutes. 8:45, and we are clicking over the first Junction switches—we are making it! 8:45½, and we swing by the tower—with 30 seconds to spare.

What would happen if the *Lark* failed to make Burbank Junction at the specified time? The operator would hold 99 until its arrival, but the *Lark* crew would be severely criticized with possible suspension on the basis of "not respecting the time of a superior train."

Wouldn't it be nice if:

. . . the New York Central would run a streamline all-coach train from St. Louis to New York?

Cpl. Jack R. Pollock.

. . . water vapor were prevented from condensing between double windows on railroad cars? Airlines used silica-gel for this.

M. D. Isely.

. . . hostesses were to replace stewards in our dining cars? This would help relieve the manpower shortage.

Karl F. Baldwin Jr.

. . . the C&NW system would extend its Chicago-Twin Cities "400" service to Omaha via the CStPM&O route?

Cpl. Henry C. Iverson.

. . . the people of Colorado would institute a "Colorado Week" once each postwar year for tourists? Besides all the usual attractions, the narrow gauge lines could be opened for a few days of concentrated passenger travel.

Linn H. Westcott.

. . . NYC or Pennsy established a daylight train between New York and Chicago?

Frank H. Moore Jr.

. . . New Yorkers would spend as much per passenger on their railroad terminals as they are now spending on the new airport? The total amount is $72,000,000.

John R. Rusch.

OWN YOUR OWN RAILROAD

Building scale models of cars, locomotives and even the right of way, itself, is a hobby leading to endless enjoyment.

Write for our booklet on miniature railroading along with our pre-war catalogue—It's interesting reading—Price 25c.

MANTUA METAL PRODUCTS CO.
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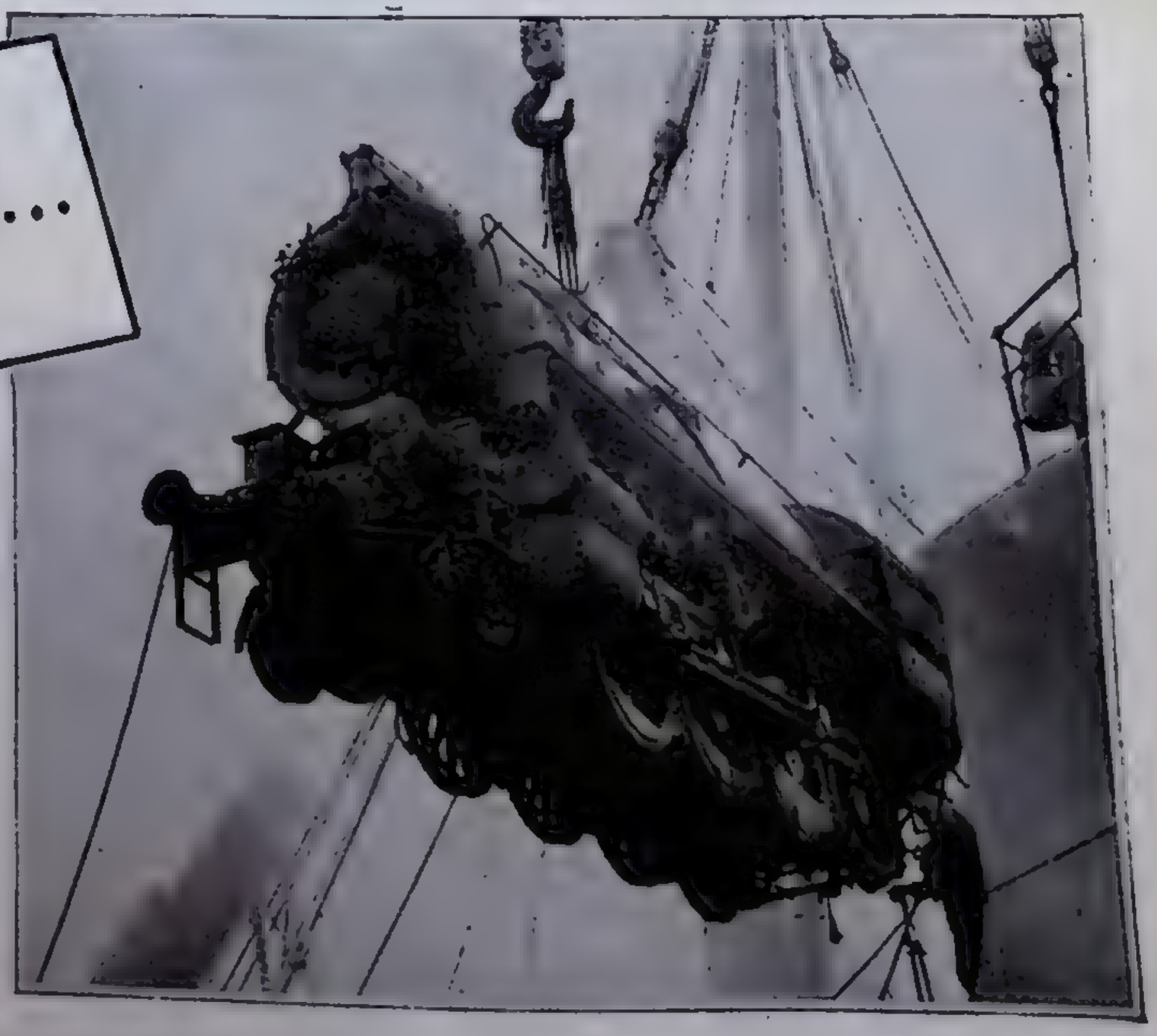
ON THE WAY TO... WAR



One of the many efficient Lima locomotives built for the War Department for service abroad.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

Ancient Track Unearthed

In the 1830's the 136-mile Charleston & Hamburg line, officially the South Carolina Canal & Rail Road Company, was the longest railroad in the world. The line was built with wooden rails and as such lasted only a few years. Some parts of the track, however, were preserved by the Kyan process, and a section of track of this type was uncovered in good condition at the Warranville, S. C., mill of the Graniteville Company. Ties were supported on longitudinal bearers here, but in other places they were raised on piles.

This railroad was built at the phenomenal cost of only $5625.92 per mile by citizens of Charleston, S. C., to rectify a great natural error—that the Savannah River did not meet the sea at Charleston, but rather at Savannah, Ga., a rival town.

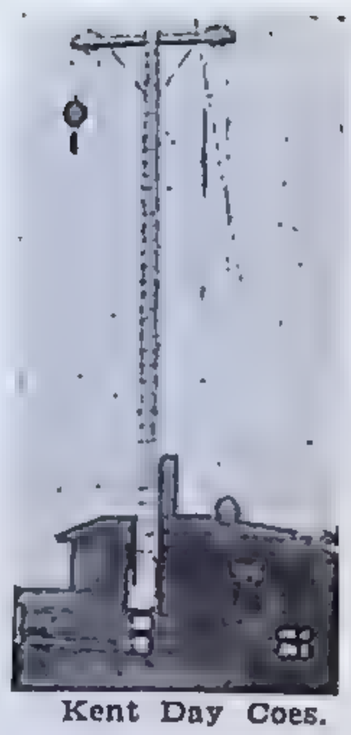
Trackage Rights

Pennsylvania trains run over tracks of six different companies in the 56.2-mile run between Toledo and Detroit. From Toledo, the Pennsy's own line is used to Galena, 0.9 miles. From that point to Alexis, 4.2 miles, the Ann Arbor and Pennsy each own one track, but the line is maintained by the AA, and operated as the Central Terminal. For the next 25.4 miles to Carleton the Pere Marquette plays host. The Pennsylvania has then again built its own iron for the succeeding 20.5 miles to Ecorse Junction, and this is followed by 1.8 miles officially listed as the Wabash to Delray, although it is of interest that .11 miles of this is actually PM trackage. The succeeding 3.2 miles belongs to the Union Belt of Detroit, while the last 1.2 miles is the track of the Fort Street Union Depot Co. Pennsylvania operates but 21.4 miles, or only 38 per cent of this route.

Old Time Ball Signal

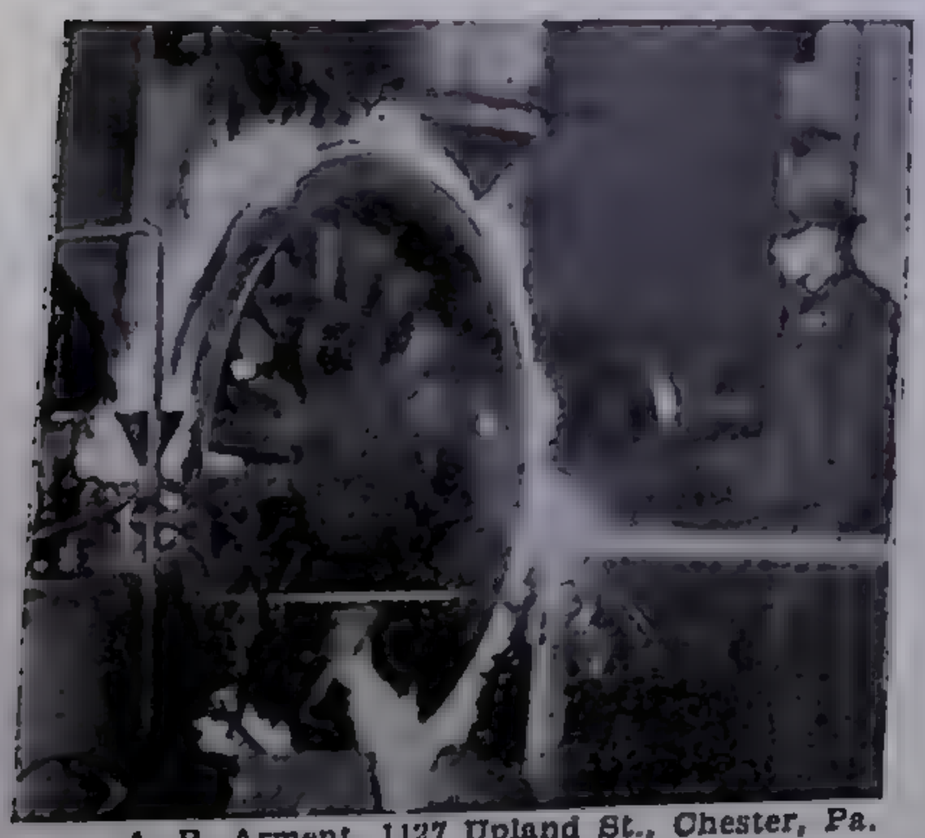
Only a few ball signals are found today and fewer are still in use. This one is at Rochester, N. H., on the Boston & Maine. A raised ball meant go ahead, thus the term "high ball" became a salute and later a name for a well-known mixture of firey waters.

After the introduction of the block circuit and the various types of automatic signals, ball signals quickly disappeared in all but the remotest areas.



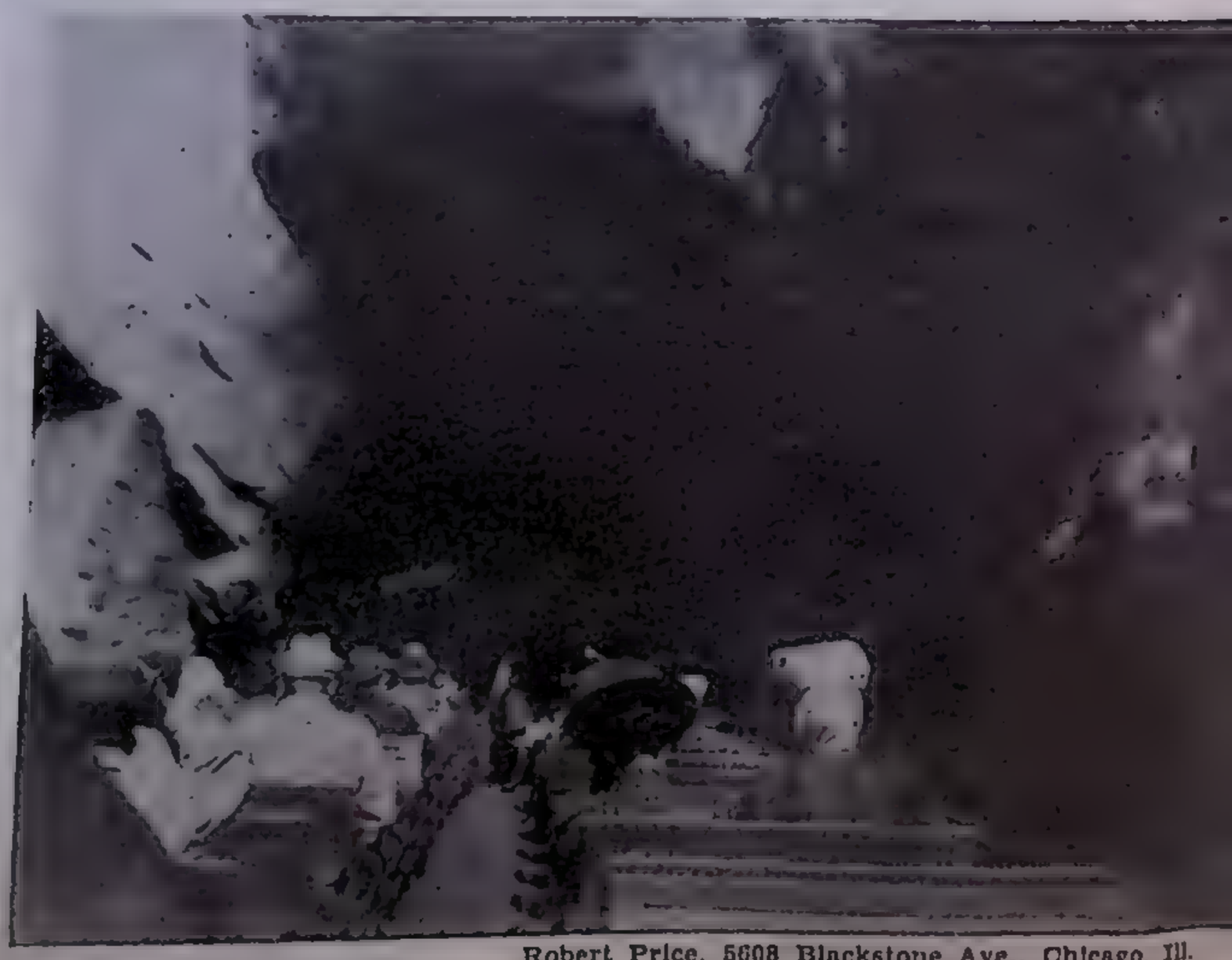
Kent Day Coes.

Hard seats and cinders were not enough to discourage passengers from using the open air observation cars attached to the ends of many a train such as No. 4 on the Denver & Rio Grande Western in Eagle Canyon back in September, 1908. Above, passing a freight; below, entering tunnel No. 4.



A. R. Arment, 1127 Upland St., Chester, Pa.

A. R. Arment of Chester, Pa., made this picture in the Enola shops of the Pennsylvania near Harrisburg. The driver is from an M-1a and a new tire is being heated before shrinking it on the wheel.



Robert Price, 5608 Blackstone Ave., Chicago, Ill.

Smooth Sailing

A railroad's roadbed has a lot to do with travel comfort. A well-built roadbed does away with annoying, sleep-disturbing bumps . . . like a boat breasting a choppy sea. It gives you "smooth sailing."

The kind of gravel used for roadbed ballast is an important factor. Union Pacific uses a special, sturdy type of crushed granite which stands up particularly well under wartime's heavily loaded freight and passenger trains. Then, too, it acts as a "cushion," resulting in more comfortable riding and less wear on locomotives and cars.

Thus, even the ballast used on the railroad's roadbed plays its part in the efficient, 'round-the-clock transportation of troops and essential battle-line freight over Union Pacific's Strategic Middle Route, uniting the East with the Pacific Coast.

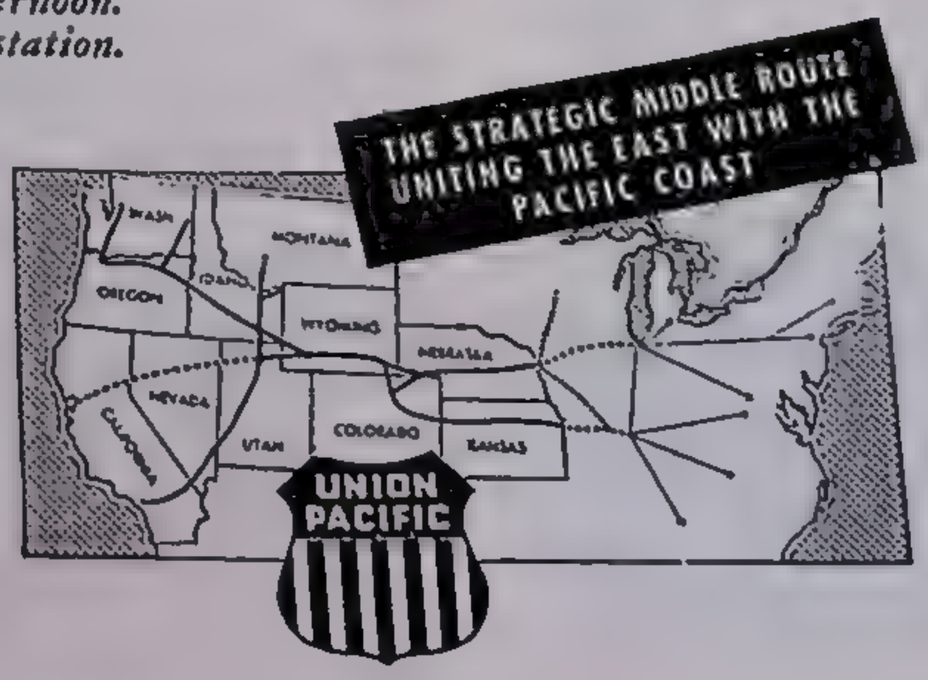
* ★ * ★

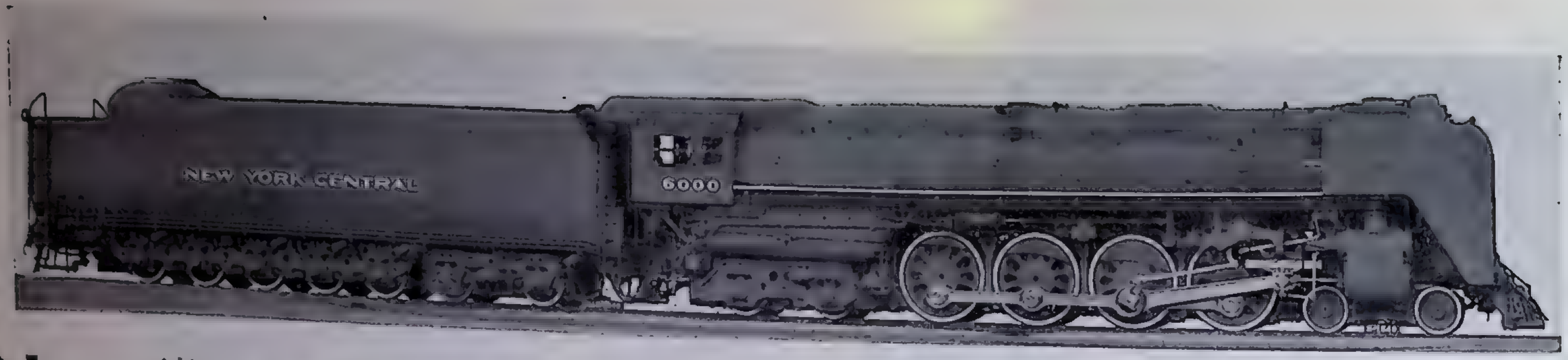
Future "smooth sailing" over *life's highway* can be assured by holding tight to the war bonds we now have . . . and, as an extra measure of economic protection, buying as many more as we can possibly afford.

★ *Listen to "YOUR AMERICA" radio program on Mutual nationwide network every Sunday afternoon. Consult your local newspaper for time and station.*

THE PROGRESSIVE

UNION PACIFIC
RAILROAD





New York Central's 4-8-4

First locomotive of new 6000 horsepower design now under test

THE first 4-8-4 type steam locomotive of the New York Central was delivered recently by the American Locomotive Company. It is an experimental engine of 6000 horsepower, and is numbered 6000. Twenty-five more like it are now on order, to incorporate changes suggested by exhaustive performance tests.

The new locomotive is as high and wide as NYC clearances will permit, and its boiler is distinguished by the absence of a steam dome, which allows a somewhat greater diameter. The NYC calls this wheel arrangement its Niagara type, thus adding to the already confusing array of names applied to the 4-8-4. It will be used for both fast freight and heavy passenger service, and after shakedown runs will be given several months of performance and capacity tests.

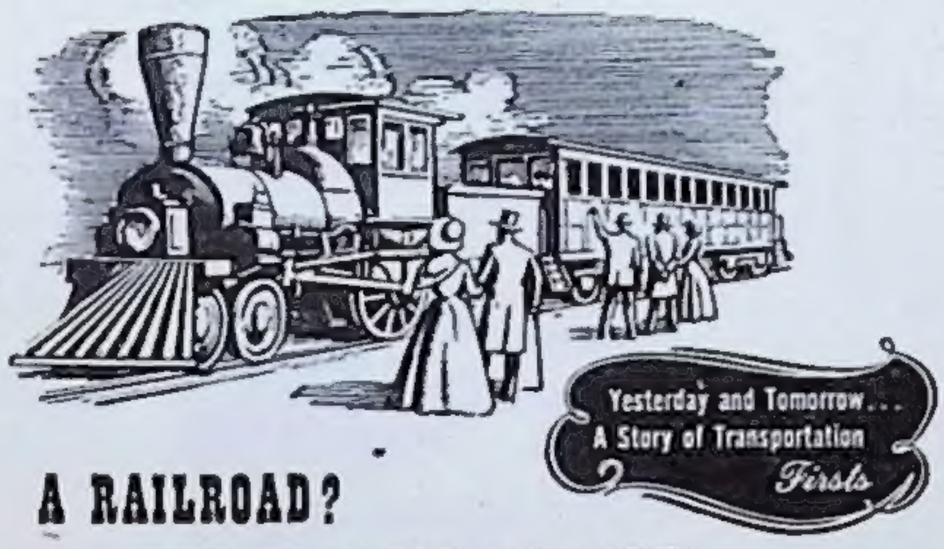
The firebox has an unusually high grate area in proportion to the heating surface of the boiler, thus assuring high combustion efficiency with varying grades of bituminous coal. The grate is nearly one third larger than the Central's L-4 Mohawk, although the heating surface is actually a little less. The steam passages are extra large to cut loss of steam pressure between the boiler and the exhaust, and the trailer truck has been modified to permit a substantial increase in ashpan volume to make possible easier and faster servicing.

The 6000 was delivered with 75-inch driving wheels, but will be tried later with 79-inch drivers. At the present the steam pressure is 275 pounds per square inch, but it will be increased to 290 pounds when the 79-inch drivers are installed. Smoke deflectors are fitted to lift the smoke above the train. Weight has been held down by extensive use of aluminum for sandbox, running boards, cab and related construction, and this class is expected to produce the highest horsepower per unit of weight of all Central locomotives. The Hudson type won fame nearly a score of years ago for reducing to a then phenomenal ratio the horsepower per unit weight, and this trend has been continued with succeeding Central motive power designs.

By the use of a multiple-axle tender bed with considerable rear overhang the total wheelbase of engine and tender has been held to 97 feet, thus permitting it to be turned on the Central's 100-foot turntables. This tender, incidentally, hits a new high in coal capacity, with 46 tons. Since Central engines take water while running, water capacity has been sacrificed for greater coal capacity, thus enabling long runs without stops for either coal or water.

Principal Dimensions

Boiler pressure, lbs.	275
Cylinders, diameter and stroke, in.	25 x 32
Diameters of drivers, in.	75
Tractive force, lbs.	62,500
Factor of adhesion	4.4
Total weight of engine, lbs.	471,000
Weight on drivers, lbs.	275,000
Weight on leading truck, lbs.	91,000
Weight on trailing truck, lbs.	105,000
Engine wheelbase, ft.-in.	48-9
Driving wheelbase, ft.-in.	20-6
Total wheelbase, ft.-in.	97-2½
Grate area, sq. ft.	100.1
Evaporative heating surface, sq. ft.	4632
Superheater heating surface, sq. ft.	1977
Tender capacity: tons of coal	46
Gallons of water	16,000

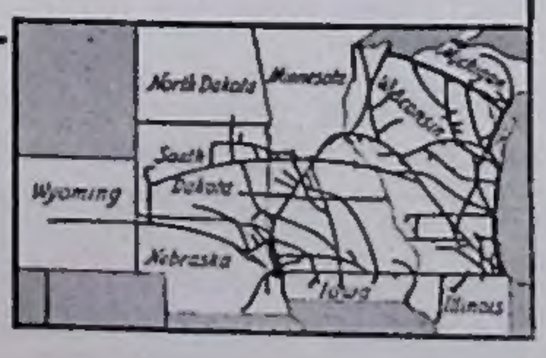


A RAILROAD? WHY, IT CAN'T BE DONE!

Some of Chicago's elite laughed at William B. Ogden when, in the late 1840s, he asked their support in building a railroad from Chicago to the West. They knew that the charter, granted in 1836, had been gathering dust for years. But Ogden, man of vision, was a determined soul, and by the end of 1848 the first ten miles of railroad were completed.

Chicago's claims to distinction in those days were mud, a second rate river and a progressive spirit. Now the railroad had come. The rails were of Norway pine, topped by strips of oak an inch and a quarter thick and three inches wide, with iron straps on top to support the cars.

The Des Plaines river, near Maywood, Illinois, was the "end of the line," and on this 10-mile right-of-way chugged and swayed the first trains to operate west of Chicago. That same stretch is one of the busiest in the West today, but back in 1848 it was quite an achievement to operate an occasional train at 15 miles per hour!



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—Minicam Photography Magazine.

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Here's what one customer wrote when he received the albums: "I wish to compliment you on your splendid efforts in producing this innovation in railroad photography. The new type paper sets off the prints in a manner not in any way second to a well-processed print on glossy paper. In fact, I believe some of the prints are far superior to anything I have observed in photographic publications. . . . These contain the highest possible quality of rail photography and the subjects are not only beautiful power examples but have extraordinarily scenic backgrounds."—Warren G. Fancher.

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Railroad Noises

An editorial from the San Jose, California, "Evening News".
(San Jose is on the main line of Southern Pacific's Coast Line)

WE HAVE always resented those snooty expressions, "across the tracks" or "down by the tracks," with their implication that there was something disreputable and socially low-life about living near railroad tracks. After living many years a block from the Espee's rails, we rise to say that there are many worse places to live.

Living close to the railroad has its obvious advantages when you are a boy. Where is there a more romantic place than the right of way, with wheezing switch engines, puffing freights (which travel so much faster now than they used to) and speeding passenger trains? Morning, noon and night railroading holds attraction for a boy, which is why so many of them go into it, finding a romance which never dulls until they die.

"But how can you stand the noise?" someone asks.

Far from being bothered by the noises, you get so you find them soothing and conducive to repose. You get so you can tell the freight trains from the passengers, and you distinguish the touch on the whistle rope of that individualistic engineman who makes his blasts so short, sharp and distinctive.

The various whistle notes represent to you these giant creatures of fire and steel talking to one another over long distances and on winter nights, when the wind is blowing and the rain is pelting against the windows it is pleasant to think of engineer and fireman, snug in their cab with the fire roaring below them, shunting lines of cars up and down the glistening wet tracks.

If these night noises from the tracks are comfortable and appealing to you during peace they have even more of these qualities during war. You realize that both the wars in which we are engaged are transportation wars and must be won not only in the foxholes and workshops but on the railroads as well. Some of the particularly long trains you hear puffing and snorting these nights are troop trains and others are weighed down with war's materiel. It is comfortable to reflect what a great job the railroadmen are doing, driving their trains and switching their cars 24 hours a day, even while you are asleep.

Back a few years, when trucks and busses started to cut more and more deeply into railroad revenues, with the airplane as an additional competitor just ahead, as a boy living near the tracks you may have wondered a little worriedly if they would put your old friends, the freights and passengers, out of business. It took the war to show that a nation's need of railroads continues, that no nation can be great and strong without them. You are reassured by that, and by the articles and drawings that have been published of vastly improved equipment which will help the railroads get their share of traffic after the war. Such things mean your friends will be able to stay alive and that, drowsily safe and comfortable, you will continue to hear the trains chugging and puffing through the night.

* * * *

We thank the San Jose News *for so beautifully putting into words the way we railroaders, and many other people, feel about trains.*

S·P The friendly Southern Pacific

Correspondence

Although you mentioned several of Southern Pacific's long tunnels [March 1945 TRAINS] no mention was made of the longest tunnel on this great system. This is the Summit tunnel near Norden on the eastbound track of the double track on the crossing of Sierra Nevada Mountains, Overland Route. It is two miles long (10,320 ft.). The eastbound track at the summit occupies an independent location from the westbound, which uses the old shorter tunnel.

C. P. Gulou, 1509 W. Koenig St., Grand Island, Nebr.

The article "Dreams of Empire" [March 1945 TRAINS] reminded me of such a dream that originated in Wenatchee, Wash. The Great Northern planned on building a railroad south from Wenatchee to the Yakima Valley fruit country, but it never got further than a few miles of grade. It was to be called the "Wenatchee Southern." The Milwaukee Road surveyed a proposed branch from Wenatchee north to Orville, Wash., on the opposite side from where Great Northern now has a branch, but it was never built.

W. Thayer, c/o A.A.B.P.O., Ephrata, Wash.

The picture [cover March 1945 TRAINS] is of the steam-powered (which it isn't) *Capitol Limited*, passing Havre de Grace, Md., (which it doesn't). Havre de Grace is between Washington and New York, and, as far as I know, only two cars of the *Capital* make that run, hiding themselves as best they can between the lowly coaches of the *Columbian*. Betcha a lunch that your pic really shows the *Royal Blue*.

Henry Abraham, 189 Montague St., Brooklyn, N. Y.

[Reader Abraham is awarded the degree of Eagle Eye.—*Ed.*]

Those ex-interurban sleepers of the Pacific Great Eastern Ry. [December 1944 TRAINS] were formerly on the Interstate Public Service Co., of Indiana. The three sleepers were originally built by American Car & Foundry Co. and were No. 166 Indianapolis, No. 167 Scottsburg and No. 168 Louisville. They were used on an overnight run between Indianapolis and Louisville and I believe they left the terminals about midnight and were taken to just short of the other terminal and then set out for the rest of the night. Early the next morning they finished the run, arriving about 7 a.m. This service was discontinued about 1930 or 1931.

Pfc. Joe L. Diaz, U. S. Army.

Besides the Rock Island Lines touching Louisiana and South Dakota [Quiz March TRAINS] the Illinois Central hits both these states, South Dakota at Sioux Falls.

W. E. Robertson, 521 Central Ave., Wilmette, Ill.

[Our thanks to Mr. Robertson and the 51 other sharp-eyed readers of TRAINS who called our attention to this slip.—*Ed.*]

The day of miracles has not passed. If you don't believe it, see the picture called "Army Wives." Therein will be shown the hero and heroine boarding a train in Chicago for the west coast. Presto! You will then be shown (a few movie hours later), the same train tearing down the track toward California and what do you think? It will be an SP *Daylight*.

Harold Bosch, 939 E. Jean St., Milwaukee, Wis.

If the writer of "Rapid Exhaust" in the November 1944 TRAINS wants to ride really rapid stuff, let him ride the Santa Fe's No. 7 from Lamy to Albuquerque. We make the 65 miles in about 54 minutes from start at Lamy to stand still at Albuquerque which includes two stretches of two miles each where speed is restricted to 40 miles per hour. This is not schedule but No. 7 is rarely on time these days.

C. M. Graham, 1201 8th St., Las Vegas, N. M.

Running Extra

Almost anything can and does happen in an art department. Ours is no exception. The sign on the door prepares you. It reads, "Nutcracker Suite—Westcott and Bursch." The other day that sign was replaced by one of those neat black and white gothic panels as in a hospital reading, "Surgery." Denizens of the art department also include a tank of tropical fish and sometimes Naome Bauer, our acting managing editor, who hangs a sign "Gone to Art Department" on her desk and retires into the Nutcracker Suite where she can spread proofs out on a drafting table.

Besides being one of the editors of TRAINS, Linn Westcott is also in charge of our book publishing and acts as layout and electrical expert for our other magazine, THE MODEL RAILROADER. He has an expert first-hand knowledge of the geography of the railroads of this country and many foreign countries, and a background of railroad civil engineering training. Every now and then he breaks out into operatic arias which can be heard even out in the pressroom. Julia Bursch is a competent artist who does much of our page layout and works with Westcott on the maps for TRAINS. She is a graduate in art of the University of California.

Two of the best things to come out of that art department are the railroad maps of Pennsylvania and Colorado, the only really complete railroad maps in print. Both show not only present lines, but all abandoned roads and important projected lines as well. Lithographed in colors, they are mighty attractive as well as useful. Pennsylvania is 50 cents postpaid, Colorado $1. For 50 cents extra you can have one or both rolled in tube with index on a separate sheet of paper so map can be framed.

Please let us know at least 30 days in advance when you move. Send both old and new addresses as TRAINS subscription list is filed geographically. With present paper shortages missed copies cannot be replaced.

Now that we're well back on schedule it's safe to tell about one of the worst of our many wartime troubles. Because of manpower shortage, our presses run only one shift, instead of the two which we ran before the war. That allows no slack whatsoever, and we can't afford even one day out. But last fall the chain drive on one of the two large presses gave way, and we couldn't get either a replacement or repairs. We replaced with a multiple V-belt drive, involving considerable machine work to fit new pulleys, and the press was out of commission two whole weeks.

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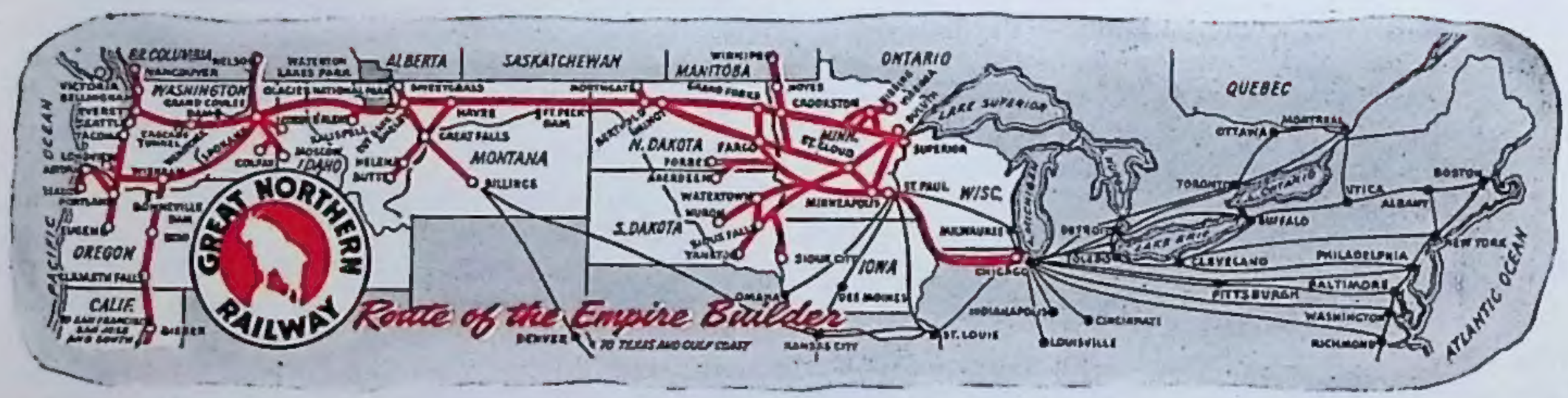
GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC



GREAT NORTHERN'S IRON ORE HAUL IS "SPECIAL DELIVERY" OPERATION

Precision Handling, Efficient Equipment Speed Flow from Mines to Docks

For nearly eight months of every year—from April through late November—Great Northern transports iron ore from Minnesota's sprawling mines to the railway's docks on Lake Superior. More than 23½ million long tons in 1944; and at least that much this year!

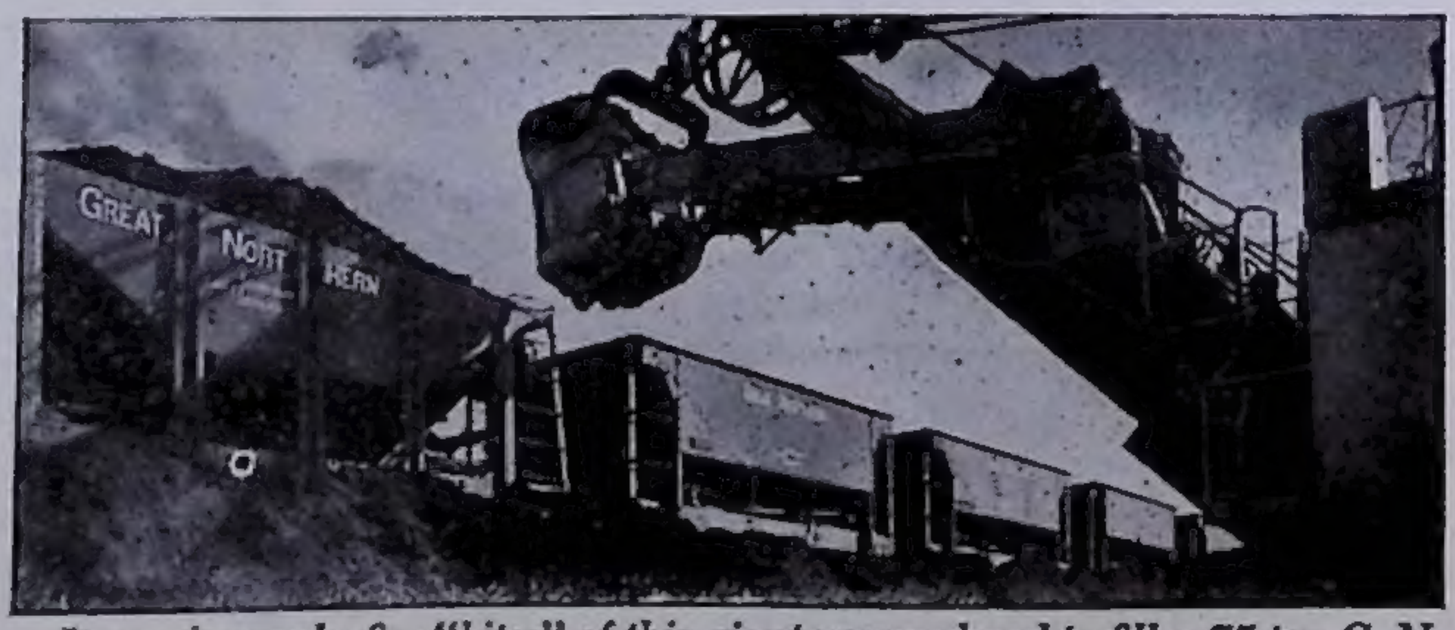
Moving mountains of Victory-vital iron ore is a "*Special Delivery*" assignment, requiring operating skill and efficient use of equipment. When the shipping season is on, Great Northern has in service 7,300 ore cars and a fleet of super-husky locomotives—power built for heavy duty.

In addition, the railway maintains two vast yards. Trainloads of ore are assembled in one; in the other loaded cars are weighed "on the move" and classified as to types of ore before delivery to the docks.

Great Northern's Allouez docks in Superior, Wis., are the world's largest, and designed to speed the loading of vessels which transport iron ore down the Great Lakes to steel mills.

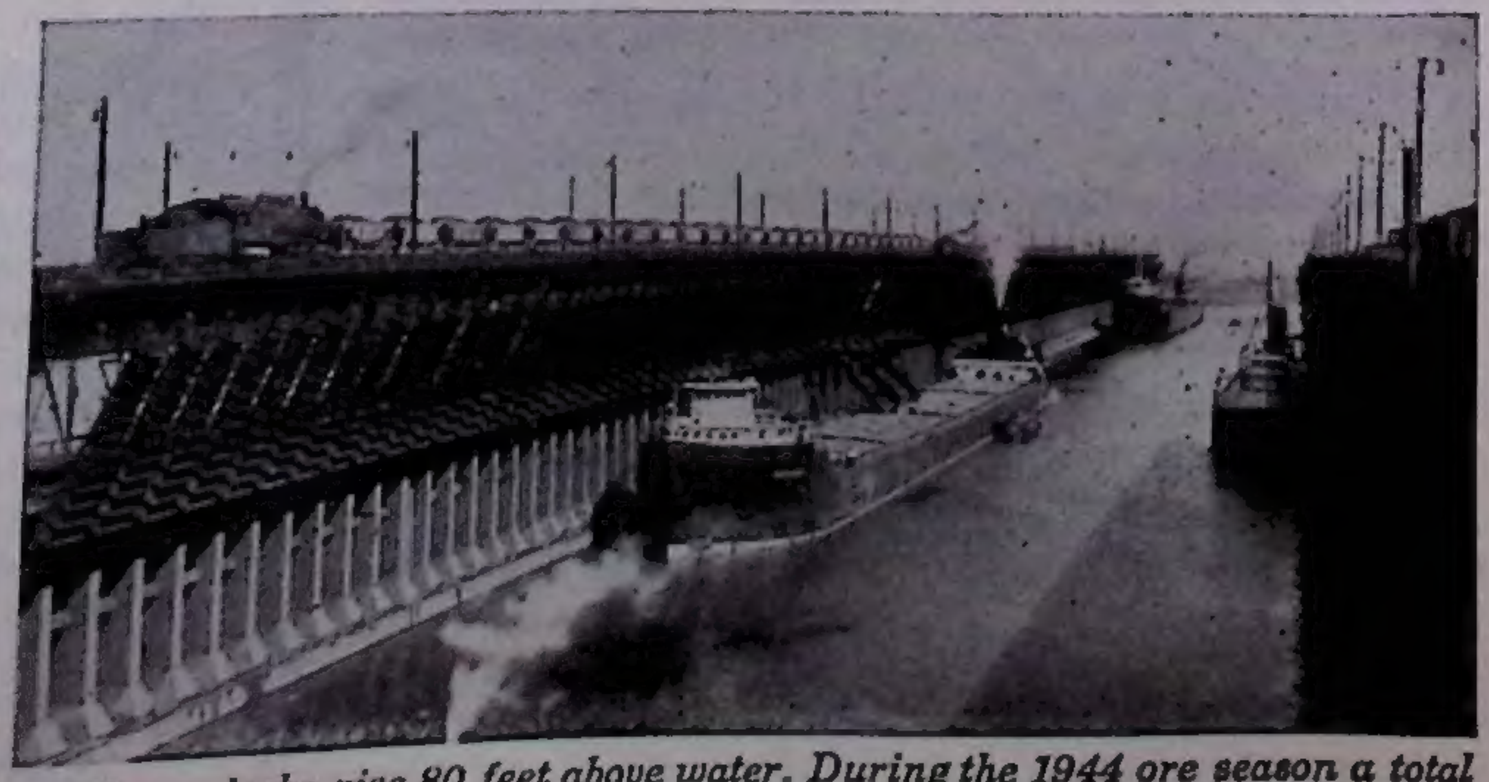
"*Special Delivery*" handling of iron ore is one of the many things which make Great Northern great.

World's largest open pit mine is on the Minnesota iron range. The pit is nearly 4 miles long, over a mile wide and 600 feet deep.



It requires only five "bites" of this giant power shovel to fill a 75-ton G. N. iron ore car.

A section of G. N.'s classification yards where ore trains deliver cars for weighing and sorting.



Allouez docks rise 80 feet above water. During the 1944 ore season a total of 2,184 Great Lakes boats were loaded here.